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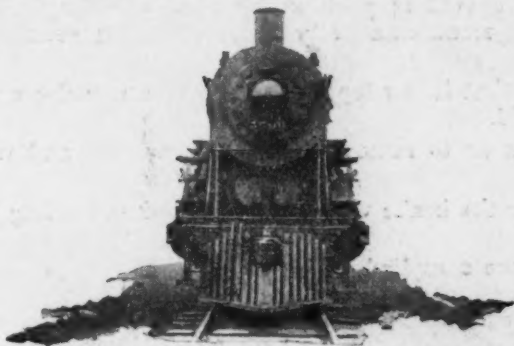
# Railway Age

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SIXTY-NINTH YEAR

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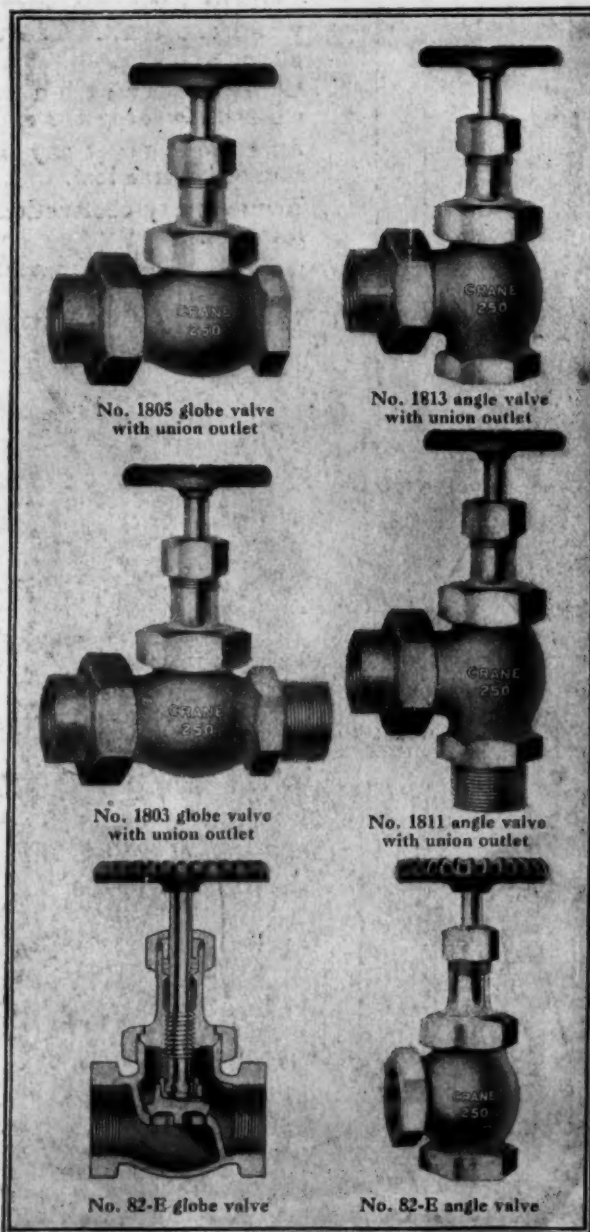


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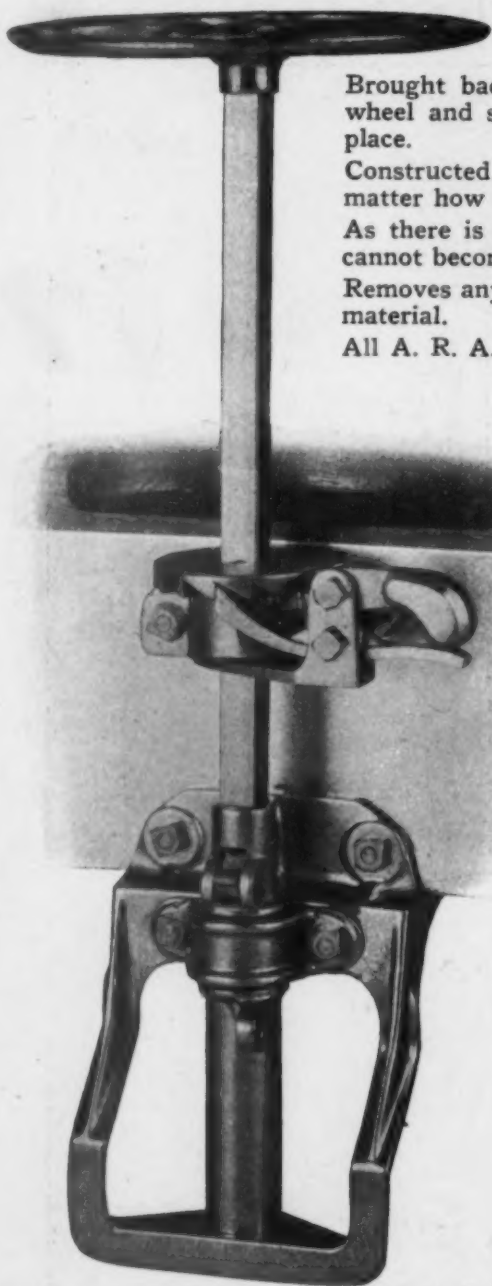


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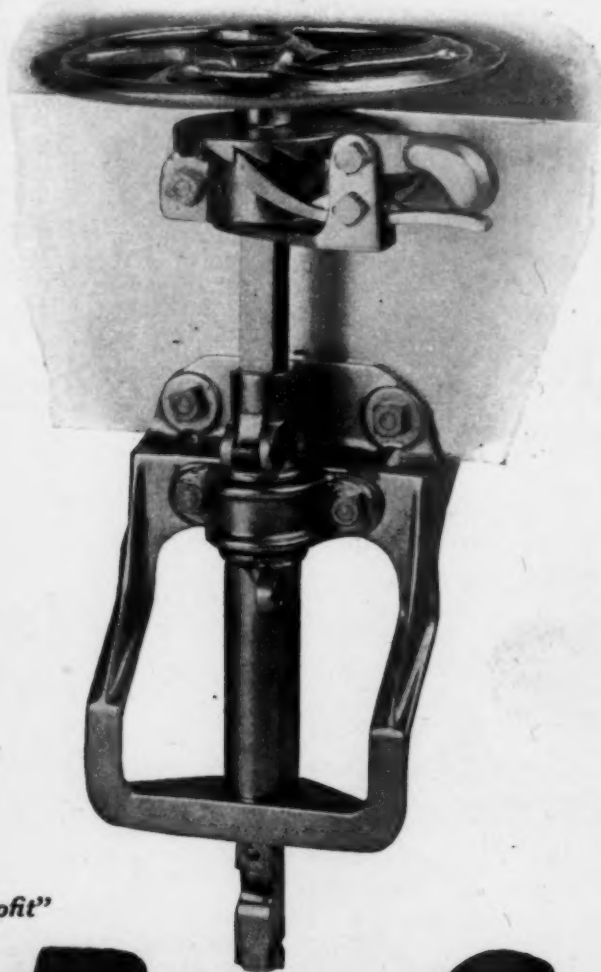
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# EDITORIAL



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The plan for extensive improvements in suburban passenger facilities in New York which was prepared by the chief engineer of the New York Transit Commission, as was reported in the *Railway Age* of May 3, is being carefully considered. Within the last few days all the interests concerned—

## Suburban Terminals for New York

officers of the municipalities in the metropolitan area and representatives of utilities commissions and railroads—have held conferences on the subject. Thus far, however, the discussion has been behind closed doors, the only exception being a diatribe against the whole scheme by John F. Hylan, New York's illustrious mayor, who characterizes the plan as "robbery of the public domain by railroad and corporate interests." This plan, as we have noted before, is most ambitious, involving the expenditure of almost three-quarters of a billion dollars. The contribution asked from the railroads, \$138,000,000, is large, but not in comparison to the total outlay. Here at last is a plan for railroad improvements in an urban district which does not attempt to saddle the greater part of the expense on the carriers and which, moreover, contemplates rates to compensate the railroads for the expenditures asked of them. These features make this plan sufficiently novel to be worthy of the attention of railroad men generally. Doubtless the plan has many defects—some of which were suggested in our issue of May 3. Nevertheless, if the principle of railroad participation in the expense of terminal and other urban improvements only to the extent to which they could expect a return at a fair rate of interest, which principle is embodied in this plan, were to receive general acceptance, the railroads would benefit greatly. It is, therefore, to be hoped that the interest and attention shown by the railroads in the consideration of this plan will be proportionate to its potential importance to them.

There are few people who would have the temerity to maintain that the railways are over equipped with cars and locomotives. Nevertheless, it is generally

## Buying Machine Tools on the Installment Plan

accepted that the railways have more equipment than they have facilities with which to take proper care of it. The reason for this is that car and locomotive purchases are financed with comparative ease, whereas the purchase of facilities for the repair of such cars and locomotives, or intended to assist in their more economic use, is not. If a railroad lacks cars or locomotives the lack is painfully evident at all times. The fact that repair facilities are lacking to permit the most economical use of the equipment is not so apparent. The reason that the financing of the purchase of cars and locomotives is done with comparative facility lies in the equipment obligation. There are no other securities issued by the railways that are received with greater favor in financial circles than is accorded the equipment trust. The effort is now being made to extend to repair facilities the advantages of financing that exist in the equipment trust certificate. Off hand, the difficulty with the financing of machine tools or the like might be expected to lie in the fact that when the tools were installed they would have to be considered as railway property and hence included with the rest of the property as part of the security behind

general mortgages. Equipment covered by equipment trusts is not so considered until the equipment notes have matured and title has passed from the trustee to the railroad. The equipment, however, has to be marked and copies of the trust agreement must be filed. It is believed that a like procedure could be followed in the case of machine tools and other facilities in which instance the financing would, in effect, be akin to that of a chattel mortgage. Attempts are now being made to bring this about, in one case by a company selling its own products and in another case by a dealer in securities, who was a pioneer thirty years ago in connection with early issues of equipment trusts.

Patching locomotives at the enginehouse just enough for them to make another round trip or two may be necessary on occasion. As a general practice, however, it is costly and not to be recommended, because slight locomotive defects that are neglected rapidly grow

## Thorough Running Repairs Important

to greater defects which must be corrected at the main shop with a heavy cost in labor, materials and loss of locomotive service. One of the most important factors in increasing locomotive utilization, in other words daily locomotive mileage, is thoroughness in making running repairs at engine terminals. The truth of this statement is obvious, and yet, without constant reminder from higher railroad officers, there is a noticeable tendency for enginehouse forces to lower the standards of maintenance, especially in times of great motive power demand. At such times, as was aptly brought out in the discussion at the March meeting of the Pacific Railway Club, the feeling somehow gains ground that "locomotives which will roll in over turntable will roll out." Possibly they will roll out, and under their own power, but to what end, if the result is an engine failure which delays an important passenger train or drag freight and perhaps ties up a division for an hour or more? It has been well said that "the most important bolt of a locomotive," from the point of view of the engineman and the railroad, "is the one which is loose." Every effort should be made to provide the enginehouse equipment and train personnel necessary for a high standard of locomotive maintenance in road service.

The need for shipping freight in May, June and July, so as to lessen the certain congestion that will be upon us in

## Ship Now! and Load Full

October is, in all probability, just as serious this year as it was last; but the splendid co-operation manifested by shippers and carriers in 1923 is not yet in evidence. Have the experiences of that remarkable year been forgotten in seven months? This question was one of the principal ones before the Middle Atlantic States Advisory Board in New York City last week, and Chairman Banham did well to make it the main point of his address. Unfortunately, the general propensity to talk generalities and to leave the actual sacrifices—sacrifice is the word; ordering coal and lumber two months before you need it and doing it without cost is not an easy trick—

to leave the sacrifices to be met by the other fellow, is evident here, as in all such knotty problems. The thing needed is actual "missionary work" with those shippers (and buyers) who do not realize the connection between a little sacrifice now and material relief in November. The paper read at the conference by J. E. Roberts, telling of the success of the Delaware & Hudson in getting shippers to load cars to their full capacity was a very practical commentary on Mr. Banham's proposals. Mr. Roberts' paper was addressed to shippers, but it ought to be addressed to the railroads as well. For many commodities the tariffs prescribe minimum carload weights far too small, and the duty of increasing these minima rests primarily on the carriers. This very definite economy cannot, of course, be accomplished in any satisfactory degree without the cordial co-operation of the heavy shippers (who must educate their customers); but the only way to get anywhere is to *begin*; begin now! Mr. Roberts' figures may well be read a second time; or until they are fixed in the memory. For a dozen years or more the tariff minima have been crying to be corrected.

A loyal reader of the *Railway Age* has inquired whether the books and articles mentioned in the column recently estab-

#### What Is Printed About the Railways

lished in this paper entitled "Books and Articles of Interest to Railroaders" are selected because of their special merit and has taken issue with one of the articles referred to therein. The fact that he took the pains to make this inquiry causes us to think that this same question may have arisen in the minds of others and leads us to explain the reason for the establishment of this column and the purpose it is intended to serve. In these days the railways are prominently before the public and many articles are being written about them. Many of these are highly informative and constructive. Others are superficial and still others are inaccurate, misleading and destructive in the extreme. The interest of readers of the *Railway Age* in articles of the first class is self-evident and we believe that railway men welcome reference to them. However, we believe that railway officers should also know of the volume and character of literature of the other classes which is appearing, particularly in magazines whose standing gives them weight among intelligent readers. While we know that much of the information in these articles is superficial or inaccurate, we believe that railway officers should know that this kind of literature is being disseminated and the channels through which it is being distributed. The contents of this column are not, therefore, limited to references to meritorious articles and books, but it is published for the purpose of giving railway men a cross-section view of the railway literature of all classes which is appearing in print.

There has been considerable conjecture on certain roads not familiar with automatic signaling as to the possible benefits

#### How Track Capacity is Being Increased

of a signal installation in increasing track capacity. It is, therefore, interesting to note that just such queries are answered in detail by operating and signal officers of other roads in the articles submitted in the contest on, "How Signals Have Helped Your Road," conducted by the *Railway Age*. The prize winning articles were published in the issue of April 12, and several other articles are included elsewhere in this issue. In these articles operating officers describe in detail specific conditions under which signals have increased track capacity or relieved congestion with safety by allowing closer

spacing of trains. On one road the track capacity of a double track line has been doubled by signaling. An interlocking at a certain yard reduces delays about 20 min. for each train. Double track was considered necessary on a branch line of the Pennsylvania 14 years ago, but following the installation of signals this expenditure is still being postponed although the traffic has increased by six trains daily. The installation of automatic signals on 11.9 miles of double track on the Baltimore & Ohio between Warwick, O., and Sterling, in 1917, effected a saving of 20 min. for each freight train over this section with a conservative estimate of savings in wages during peak business of \$7,500 per month. Such information regarding specific installations, which can be inspected in service by those interested, should be particularly convincing to railroad officers who harbor doubts regarding the economic advantages of signaling.

If one is determined to be optimistic about present business conditions he must find some other basis for his optimism

#### The Decline of Car Loadings

than recent loadings of freight. In the last six weeks for which the statistics are available total loadings of freight were less in every week than in the corresponding week of 1923. Average loadings per week in the six weeks ended April 26 were 885,901 cars, or 50,720 cars less than they averaged in the corresponding weeks of 1923. The total decline was principally due to the decline in coal loadings, which averaged only 134,860 cars a week, or 43,900 cars a week less than in the same weeks of last year. The loadings of coal made a new low record for the year, when, in the week ended April 26 they dropped to 117,572 cars, or about 6,700,000 tons. There have been decreases recently, however, in the shipments of most classes of commodities. In the six weeks referred to shipments of forest products and less-than-carload merchandise were larger than last year, but shipments of all other classes of commodities declined. This decline of freight business is, of course, having an adverse effect on both the total and net earnings of the railways. The total earnings in March were almost \$31,000,000 less than in 1923, and when statistics for April are available the decline of earnings in that month probably will be shown to have been still greater. There is no better measure of the general business activity of the country than freight shipments, and they show that within recent weeks the decline in business activity has been substantial. In view, however, of the fact that most underlying economic conditions seem to be sound, that the principal threat to business seems to be the excessive playing of politics in Washington, and that Congress seems reasonably sure to adjourn within a month, it appears probable that there will be an increase in business activity after the middle of the year, and that then railroad traffic and earnings will show increases.

The setting up of a program for the season's maintenance of way work is regularly accompanied by a follow-up system

#### Sacrificing Quality for Quantity

which provides the system operating officer with current information on the progress being made from week to week. If the progress reported does not conform to the schedule inquiries are made in regular course, not only for the purpose of ascertaining the cause of the delay but also to apply that degree of pressure which will put the entire staff on its mettle to obtain the most efficient and effective performance. This is a part of good management and is applied in particular to



such operations as rail renewals, for the rail, having been bought, paid for and distributed, is of no value to the railroad until it has been inserted in track. Moreover, experience has shown that the greatest efficiency in extra gang work is obtained by concentrating on a single operation. A gang that is continuously employed week in and week out on rail laying will produce better and cheaper results than a gang that must shift from rail laying to surfacing, tie renewals or other work. However, the policy of concentrating on rail renewals to the disregard of the other operations is subject to one serious danger, particularly when its consistent prosecution in the face of a curtailment of maintenance appropriations forces a postponement of the other major maintenance of way operations. New steel replacing old rail that has become badly surface bent is immediately subjected to conditions that may soon result in its serious injury unless the laying of the new steel is followed within a short interval by a general resurfacing. Therefore, in spite of other considerations to the contrary it is entirely possible that local conditions may point to the need of some departure from the program for the immediate laying of all of the rail distributed and general officers may well consider this point before insisting that the rail renewal program be carried out implicitly to the neglect of other important work.

## The Permissive Feature for Train Control

THE INTERSTATE COMMERCE COMMISSION should be as much interested as the railroads in preventing any unnecessary stops and delays to trains, with the consequent wear and tear on equipment and decrease in track capacity, which may result from too stringent specifications for installations of train control devices. Before the first order was issued the Train Control committee of the American Railway Association, in co-operation with technical representatives of the Interstate Commerce Commission, prepared specifications which provided for a permissive release in connection with a simple automatic stop. The commission, in its order, struck out this paragraph on the ground that it would be unsafe. The railroads made a plea for its reinsertion at the first hearing but this was denied.

As the specifications now stand, an automatic stop device must bring a train to a stop before the release can be accomplished. This introduces a number of difficulties in train operation. Among these difficulties may be mentioned the fact that there will be an increase in the number of stops really necessary for safety and in the likelihood of delays to traffic and tie ups of service. In freight service serious results may occur on long mountain grades or if an application is received when the train line is being recharged. Unnecessary trouble will also be caused at stopping points which road engines may have to pass in making switching movements.

The commission has recognized the fact that all roads do not require the same kind of apparatus to meet their varying traffic conditions and that in many cases a simple automatic stop is all that is required to provide the safety desired. But while recognizing this fact, the commission has at the same time made its specifications so restrictive as practically to make speed control imperative if certain adverse operating features are to be eliminated. A number of roads believe that it will add vastly to the cost of installation and maintenance to eliminate these unsatisfactory operating conditions which may result from an automatic stop device without additional adjuncts.

As the specifications now stand, the commission recognizes

two types of devices, the automatic stop and automatic train control, but undue restrictions are placed on the automatic stop.

W. R. Scott, president of the Southern Pacific Lines in Texas and Louisiana, and others in their statements at the hearing last week spoke of the necessity of the restoration of the permissive feature. Action to this effect by the commission should do much to dispel the feeling on the part of the enginemen, described by Warren S. Stone, that there is a lack of confidence in them. The belief that the permissive feature is unsafe has not been supported in 10 years' service under practical operating conditions. On the other hand unnecessary stops under the present specifications may introduce hazards just as great or greater than those which might be introduced through the use of the permissive feature.

It is to be hoped that the commission will modify its ruling and re-insert the permissive clause which its technical experts in co-operation with the A. R. A. agreed to in the preparation of the specifications prior to the issuance of the first order.

## Abolishing the Pullman Surcharge

EXAMINER JOHN B. KEELER of the Interstate Commerce Commission has made a report to the commission recommending that the so-called "surcharge" on tickets for Pullman car travel be abolished. The examiner's conclusion is that if the railways "are not adequately compensated under their contracts for hauling the greater weight per passenger in the Pullman cars and furnishing the other extra services in connection with the hauling of the Pullman cars, they should secure extra compensation from the Pullman Company rather than through a separate charge for what should be treated as one service." The examiner's report was quoted at length in the *Railway Age* for May 10, page 1155.

The surcharge last year yielded a revenue of \$37,500,000. The railways as a whole failed to earn the net return to which the commission had held they were entitled. There was no shortage in the net return earned by the southern carriers, but there was a substantial shortage in the return of the eastern lines and a very large shortage in that of the western lines. Furthermore, the railways as a whole are still failing to earn the net return to which the commission holds they are entitled. If the surcharge should be abolished without any other change being made to compensate them for its loss the effect would be to increase the present inadequacy of the net return by \$37,500,000 a year.

The total earnings of the Pullman Company from its transportation business are double the surcharge, or only about \$75,000,000 a year. It is quite obvious that, therefore, unless Pullman rates were advanced, any readjustment of the contracts of the railways with the Pullman Company which resulted in reimbursing the railways for the loss of the surcharge revenue would also result in reducing the transportation earnings of the Pullman Company by one-half and, therefore, in the bankruptcy of the Pullman Company. But the Pullman Company is just as much entitled to earn a fair return from its transportation business as the railways. It would be wholly impracticable to reimburse the railways for the loss of any considerable part of the surcharge revenue by a mere revision of the contracts of part of them with the Pullman Company.

It necessarily follows that the Interstate Commerce Commission could not abolish the surcharge without stultifying itself with respect to its own rulings concerning the return

the railways are entitled to earn unless at the same time it should put into effect one of the following plans:

First, largely advance Pullman rates and then in some way effect an arrangement under which the railways would get approximately \$37,500,000 of the revenue derived from the rates charged by the Pullman Company. It may be said that some railways already are earning the fair return to which they are entitled while others are not, and that the advance in sleeping car rates should be made only on the latter. This, however, would be impracticable because if higher sleeping car rates were charged on some railways than on others in the same territory, the railways on which lower rates were charged would get all the competitive Pullman car business.

Second, make an advance in freight rates that would cause an increase in revenue equal to the surcharge revenue. In view of the strong demand for reductions of freight rates in the very territories where the railways most need increased earnings this plan would be impracticable.

Third, impose a special charge for the handling of baggage or increase mail or express rates.

Fourth, while leaving in effect the present passenger rates for coach travel, provide for different tickets good only for travel in Pullman cars at rates 10 per cent higher than those charged for coach travel. This increase in passenger rates for Pullman car travel would cause an increase in the earnings of the railways in passenger service almost exactly equal to the loss they would sustain by abolition of the surcharge. It may be said that passenger rates for Pullman travel should be advanced only on those roads that are not earning a "fair return." But passenger rates, like Pullman rates, must be the same on different railways in the same territory or the roads on which they are higher will lose the competitive business.

On the whole, it seems that the fixing of a charge of 10 per cent more for railway tickets to be used by passengers riding in Pullman cars than for passengers riding in coaches would be the most practical and sensible solution of the problem. The change would be an advantage to the Pullman Company, which would be relieved of the necessity of collecting for the railways what is actually a transportation charge.

It will be said in regard to this plan that its adoption would not actually abolish the so-called "surcharge," but merely make the passenger pay it in the railroad rate. That is true. But under the Interstate Commerce Commission's own rulings there is at the present time no justification for any reduction of rates of any kind unless it is to be offset by an advance in rates of some other kind. The commission held in 1920 that the railways were entitled to earn until March 1, 1922, an average return of 6 per cent on their tentative valuation. It subsequently held that after March 1, 1922, they were entitled to earn  $5\frac{3}{4}$  per cent. In no territory, except in southern territory last year, has either of the large groups of railways ever in any year earned the return that the commission held to be fair. Their net operating income within the last three and a half years was \$1,200,000,000 less than the commission held they were entitled to earn. They are not now earning what the commission holds they are entitled to. In view of these facts, how could the commission logically or fairly abolish the surcharge without at the same time adopting some plan which would give the railways at least as much as the abolition of the surcharge would take away from them?

The report of Examiner Keeler ignores the need of the railways as a whole for all the revenue now derived from the surcharge. In doing so it ignores the most important question the commission itself must answer—viz., if the railways are not to get from the unpopular surcharge the revenue now produced by it, where are they to get it?

## Books and Special Articles of Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

### Books and Pamphlets

*Competency and Economy in Public Expenditures*, edited by C. L. King. Trend in public expenditures, competency in public management, personnel and morale problems. *Annals of Amer. Acad. of Pol. & Soc. Science*, May, 1924. 366 p. Published by the Amer. Acad. of Pol. & Soc. Science, Philadelphia, Penna. \$2.00.

*The State of the Nation*, by Albert J. Beveridge. The chapters on railroads were revised from the articles "Steady as She Goes," included in the list for Feb. 9, 1924. 277 p. Published by Bobbs-Merrill Co., Indianapolis, Ind. \$3.00.

*Survey of Northern and Northwestern Lakes*. April, 1924. Harbor, rail, and other facilities for points on these lakes. U. S. War Dept. Corps of Engineers, Bulletin No. 33. 468 p. Published by U. S. Lake Survey Office, Detroit, Michigan.

*Taxation: the People's Business*, by Andrew W. Mellon. 229 p. Published by Macmillan, New York. \$1.25.

### Periodical Articles

*Financial Requirements of the Railroads, and the Market for Railroad Securities*. *Commerce Monthly*, May, 1924, p. 3-11.

*The Forerunners of the West*, by Aubrey Fullerton. Ox-carts, York boats, J. J. Hill's steamboat on the Red river, and early railroads in Northwest Canada, and their contributions to the economic development of the country. *Canadian Magazine*, May, 1924, p. 49-53.

*The Freight Car Yields to the Truck*, by Robert C. Wright. Motor freight services on the Pennsylvania Railroad. *Nation's Business*, May, 1924, p. 40-41.

*The Rival Bids for Muscle Shoals*. Summaries of the Ford, and Hooker-Atterbury-White offers, with various editorial comments. *Literary Digest*, May 10, 1924, p. 10-11.

*Selling to Brazilian Railways*, by M. A. Cremer. Commodities wanted, and methods for selling them. *Commerce Reports*, May 12, 1924, p. 359.

*The Socialist Movement in Great Britain and the United States*, by Bertram Benedict. Some emphasis on results of socialist attitude toward railways. *American Political Science Review*, May, 1924, p. 276-284.

*Spain—the Gateway of Europe. How the Projected Electric Railways Will Revolutionize Electric Transport*. Sphere [London, Eng.] April 26, 1924, p. 100.

*The Future of American Railroads*, by Winthrop M. Daniels. The probable developments in technique, terminal operation, consolidation and ownership of the railroads. Foresees control passing to "directorates on which the creditors or bondholders as well as the nominal proprietors will be represented, and on which the public, in its threefold capacity as patron, employee and tax-payer, may also have a place." *Quarterly Journal of Economics*, May, 1924, p. 361.

*The Case for Industrial Dualism*, by E. A. Ross. Advocates private ownership for industries with small investment per employee and public ownership for others—thus "it may be possible to avert the decadence of democracy and the development of capitalistic feudalism, without abandoning private capitalism and plunging into the bogs and thickets of socialism." *Quarterly Journal of Economics*, May, 1924, p. 384.

*No-Par Stock: Its Economic and Legal Aspects*, by J. C. Bonbright. Takes the position that objections to no-par stock are based largely on provisions of present laws rather than to inherent defects in the form. *Quarterly Journal of Economics*, May, 1924, p. 440.





*Exterior of the Denver Locomotive Shop*

## Denver & Rio Grande Western Rebuilds Shops

### Completes Extensive Program of Modernization of Facilities for Repair of Cars and Locomotives

**I**T IS SELDOM that a large railway can undertake the reconstruction of all of its principal shops for the repair of cars and locomotives to bring them into accord with modern practice at one time. This is the opportunity which came to the Denver & Rio Grande Western and which led to a construction program involving the expenditure of nearly \$3,000,000, which program is now drawing to a close.

The problem of maintaining a proper balance between the constantly increasing size and number of locomotives and

tion of existing facilities and the probable future traffic development.

As a result of the survey a rehabilitation program was adopted involving additions to the general repair plants at Denver and Salt Lake City, with added repair facilities and engine houses at Salida, Grand Junction and Alamosa. Construction on this work was started early in 1923 and is now nearing completion. In providing facilities for general repairs, it was found unnecessary to increase the erect-



**Heavy Machine Bay in Denver Locomotive Shop, Showing Wheel Department**

cars and the facilities for maintaining and handling this equipment has been given careful consideration by the officers of this road and their engineers with the result that a survey was made of equipment and facilities on the system. In this survey consideration was given to all of the elements affecting the maintenance of equipment and the care of locomotives at terminals to determine the necessity for additions to existing facilities, with the purpose of counteracting the increased cost of maintenance due to higher wages, more intricately designed locomotives and heavier units in both locomotives and cars, and also to decrease the delayed time used in holding equipment under repairs. Among the elements involved are the distribution of the equipment, the source of supply of material, the labor market, the continua-

ing pit repair track capacity, but, on the contrary, with proper crane facilities and added tool equipment, the time of equipment in shops will be very much reduced with a corresponding decrease in the number of locomotives and cars actually undergoing repairs.

Increased labor rates and correspondingly increased costs of freight car maintenance, which have brought the total sum now being expended for the repair of freight cars up to and sometimes in excess of the cost of maintenance of locomotives, have made it of vital importance that facilities be provided to assist in reducing this cost. Particular attention has been given to this subject on the Denver & Rio Grande Western with the result that identical freight car repair shops have been built at Denver and Salt Lake City, in which

production methods are being applied to repairs to freight cars with very satisfactory results. At Salida and Grand Junction old locomotive repair shops, vacated through the provision of new buildings for locomotive repairs, have been made available for housing the heavy repair freight cars originating at these intermediate terminals, not scheduled for repairs at the main repair plants.

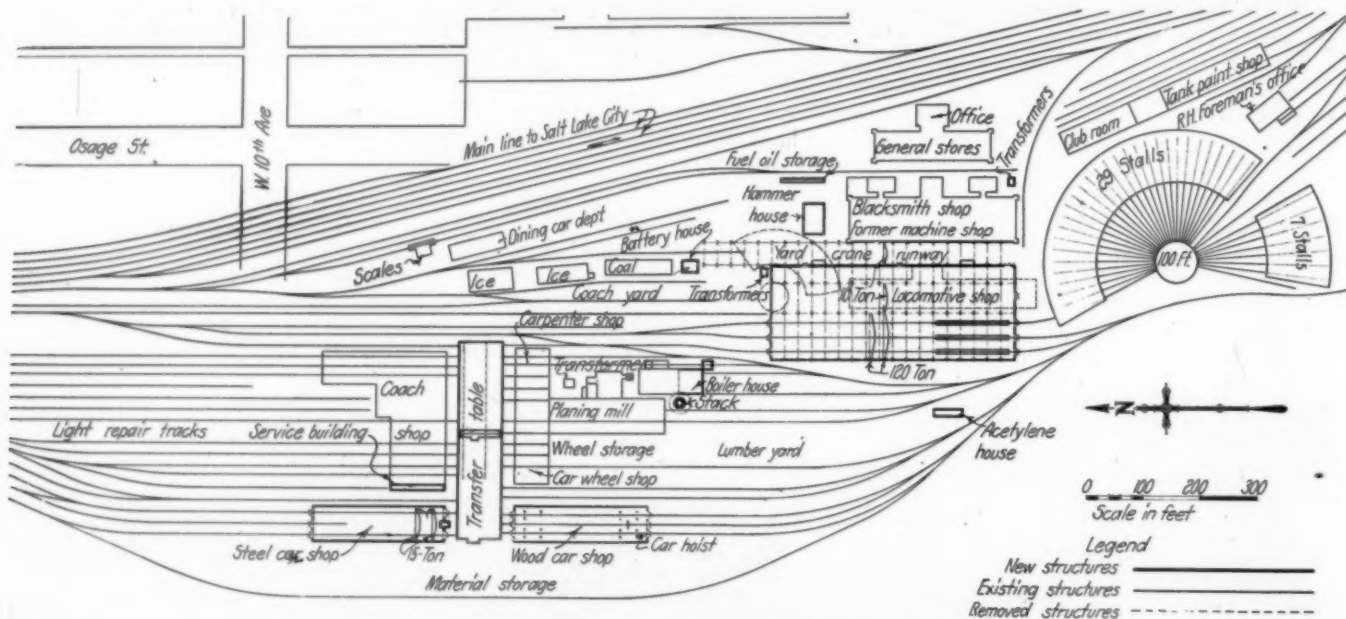
## The New Facilities at Denver

The Denver terminal is located at Burnham, just inside the southern limits of the city, on the site of the old plant, with the addition of only a small strip of land on the west to provide for additional tracks. Several of the old structures are continued in use for their original purposes, while one or two were added to or altered slightly to adapt them to new purposes.

The new development consists essentially in the provision of a large, thoroughly modern locomotive erecting and machine shop; a steel car shop and a wood car shop, served by an extension of an existing transfer table bay between the old car wheel shop, planing mill and coach shops to pro-

so that the latter is served by the cranes which also serve the unwheeling and erecting space. A narrow platform or balcony extends the length of the bay on the side toward the shop for the storage of locomotive parts. This balcony is also served by the large cranes, each of which is provided with a light auxiliary hoist on the shop side of the main hoist for handling parts.

The machine tool bay is provided with a balcony 35 ft. wide throughout its length, on which light manufacturing is carried on while the heavy manufacturing is confined to the ground floor. The machine work on both the main floor and the balcony is well departmentalized so that each department is complete and independent in itself, eliminating the expensive delays and difficulties of co-ordination that are apt to be found where two or more departments are employed on a single job. Departments are so located as to eliminate lost motion in transporting parts about the shop, the longitudinal arrangement of the shop lending itself readily to this purpose by making it possible to place repair and manufacturing facilities close to the point of assembly of the corresponding parts in the erection bay. Transportation paths are thus cut to a minimum and crossings, with their consequent delays,



The Layout of the Denver Shop Facilities

vide free inter-movement of cars between all of the car departments. An extension to the existing boiler plant and the addition of oil storage, electrical and service facilities, was also necessary to serve the new repair plant. The former machine shop has been converted into a blacksmith shop and a yard crane runway with a 10-ton crane is provided between this and the locomotive shop to serve both.

### The Locomotive Shop

The locomotive shop is a brick and steel frame building 432 ft. long by 165 ft. wide. It is divided longitudinally into two bays of nearly equal size, one of which is designed for an erecting and boiler shop bay, while the other is given over to machine tools.

The erection bay is traversed by three through tracks, each of which runs over an engine pit at the incoming end. Two 120-ton Whiting overhead traveling cranes span the bay on a runway the full length of the building. These cranes can lift a locomotive at any point in the erecting bay and place it at any other point, permitting full use of the erection space.

The far end of the erecting bay is used as a boiler shop,

are eliminated. The wheel department, for instance, is located in the shop bay opposite the stripping and assembly pits and is connected with the latter by two standard gage tracks. The boiler department is at the other end of the shop and is opposite the part of the erecting bay given to boiler erection.

The transportation of parts about the shop is handled by interlocking crane and truck systems. The machine tool bay is served by a 10-ton overhead traveling crane. This crane serves directly all of the machine tool bay that is not under the balcony, as well as the inner seven feet of the balcony, and is used both for transferring parts between the two levels and for longitudinal transportation on either level.

Both storage battery electric trucks and gasoline tractors with trailers are used for transporting parts between bays and to locations inaccessible to the cranes. Operating through doors opening into the yard crane way, these trucks are also used to bring raw materials into the shop and to carry finished parts outside for stock storage or for shipment to other points. Easy operation of the trucks is assured by the installation of creosoted block floors on reinforced concrete base throughout.



A 50-ft. yard crane runway and storage bay, extending the length of the shop and several bays beyond on the machine tool side, facilitates the handling of materials and parts into and out of the shop, beside providing liberal handy storage space. The crane, spanning the full bay, can load or unload trucks at any point. A track extends three car lengths under one end of the craneway to allow for the easy unloading of materials from outside and the loading of parts for other points. Two extensions of the shop balcony into

transportation system already outlined. In addition, a standard gage track extends from the erection bay of the locomotive shop into the blacksmith shop for the transportation of heavy forgings back and forth.

This shop is given over to forging and heat treating, with a well organized spring manufacturing and assembly department, an acetylene cutting and welding department and a brass foundry. Like the locomotive shop, the blacksmith shop is also highly departmentalized and considerable thought



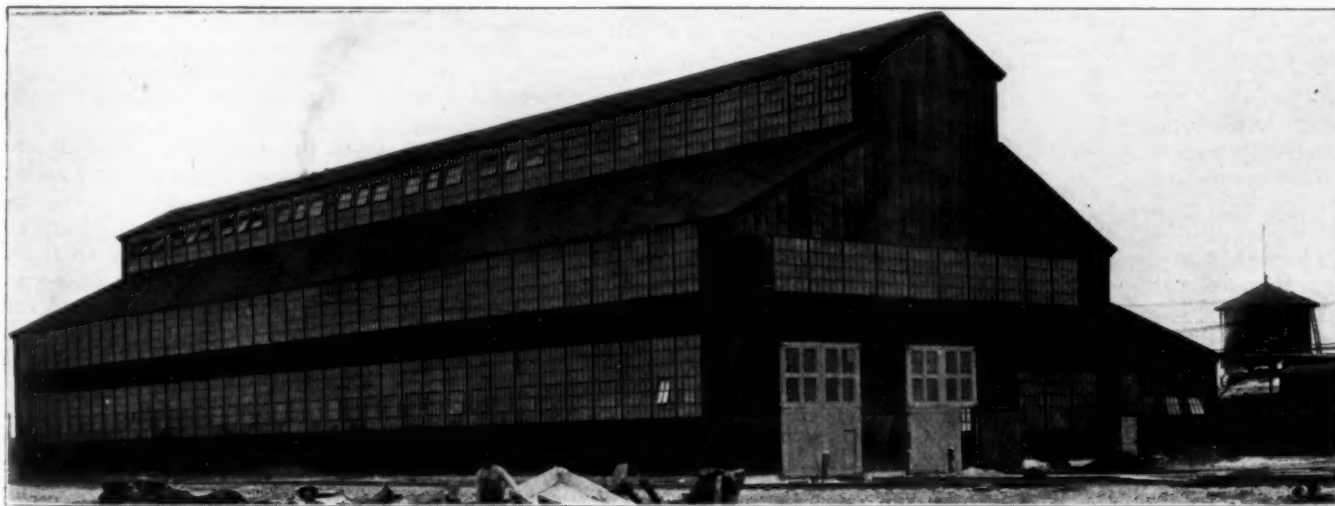
Interior of Grand Junction Shop Before All Equipment Was in Place

the craneway permit the handling of materials back and forth between the craneway and the shop balcony direct. All transportation, both external and internal, is thus tied together into a compact, interlocking, free moving system.

The efficiency of the workmen is facilitated by providing the best possible lighting, both natural and artificial, well distributed throughout the shop. Large wall sash of Truscon design are provided on all sides and in addition an overhead monitor extends practically the full length of the build-

ing has been given to reducing manpower and lost motion to a minimum.

The old transfer table between the existing car department buildings was not long enough to take care of the larger rolling stock now in use and it was replaced with an 80-ft. table, which is long enough to handle not only the longest freight cars in use, but modern passenger cars as well. At the east end, this table serves the most westerly coach yard tracks and is used to transfer coaches into the coach and



Exterior of the Grand Junction Shop Building

ing over the center of each bay. Heating is provided by a system of unit hot blast heaters distributed along the wall and bay lines through the shop. Complete service facilities, including lockers, are located on both the main floor and the balcony at points as nearly central as possible to the men served by each of them.

The blacksmith shop is reconstructed from the old machine shop and also lies adjacent to the crane runway opposite the locomotive shop. Being served by the crane runway and by the truck system, this shop is also tied in with the general

coach paint shops. The table runway has also been extended about 100 ft. toward the west to take care of the new steel and wood freight car shops which lie to the west of the old shops on either side of the table.

#### The Steel Car Shop

The new steel car shop is a steel building about 65 ft. by 242 ft. in area with brick walls up to sill height and Robertson process asbestos protected metal covering above. It is served by two tracks which run from the transfer table

through the building and out into the car yard at the other end, and by a third stub track between these two, which enters the building from the car yard and extends one car length inside. Two 15-ton overhead traveling cranes span the building and serve to lift car bodies from their trucks and set them in position for repairs. The through tracks lie well toward the sides of the building, leaving a center aisle directly accessible to both tracks for working space. Jib cranes are provided on every column along the tracks for the lifting of parts and the handling of riveters.

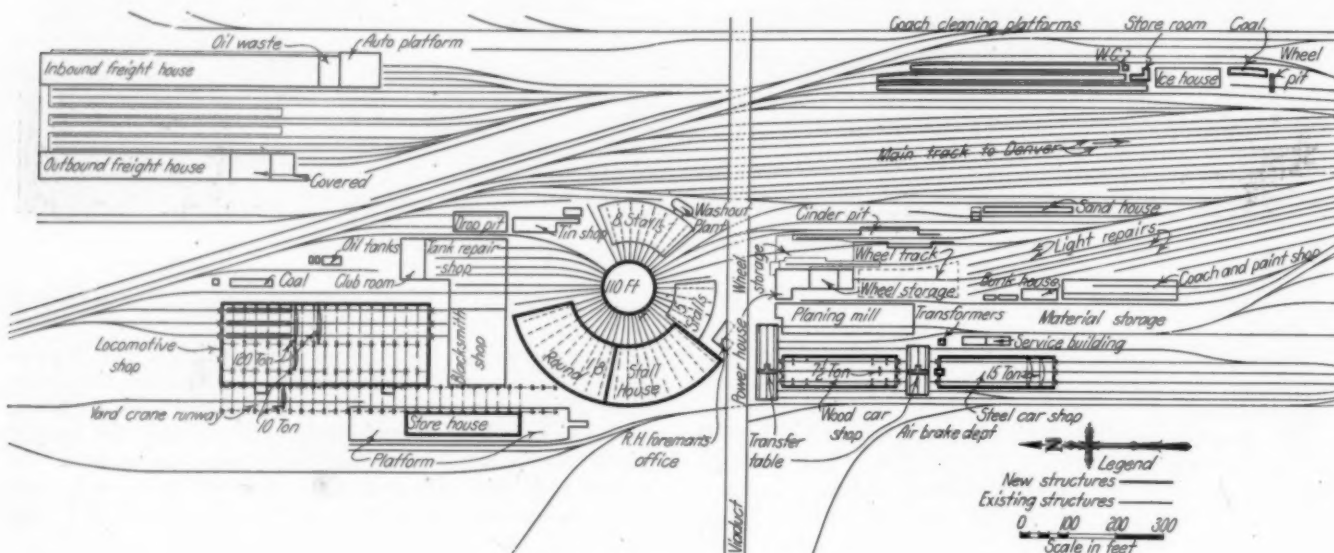
The stub track serves as a material track for bringing in materials from outside to be unloaded by the cranes. It is also provided with floor beams and a special design of car straightener for pulling bent steel cars back into shape. Immediately beyond the end of the stub track is the car truck repair space. Built into the wall in the center of the opposite end of the shop is an oil-fired heating furnace for heating

The building is connected with the carpenter and car wheel shops via the transfer table.

The building is well lighted by saw tooth skylight construction and by two tiers of Truscon side wall sash the full length of each side. To take care of the increased size of the car departments, service and locker facilities are provided in an extension the entire length of the west side of the old coach shop—the most central location available.

### Other Facilities

To provide the necessary increase in boiler capacity, a 45-ft. by 46-ft. extension has been built on the south side of the old boiler house, and 600 hp. additional boiler capacity installed, bringing the total capacity to 1,600 hp. at normal rating. Stokers, feed water regulators, pumps and other modern equipment have also been installed, and a 225-ft. radial brick stack, new breeching and adequate ash handling



The Shop Layout at Salt Lake City

bent plates and for flanging work. A flanging clamp is provided for the latter work. The shop is open to the old car wheel shop via the transfer table for wheel and axle repairs and replacements.

### The Wood Car Shop

The wood car shop, lying directly across the transfer table from the steel car shop, is served by three tracks running from the table lengthwise through the building and out into the yard at the south end. This shop is of timber frame, covered with Robertson process metal, 65 ft. wide by 240 ft. long.

The center track is for truck repair work only and is served from the two outside tracks by a transfer dolly for transferring trucks back and forth. An electric traveling crane, operated from the floor, spans the truck track and serves to handle the trucks.

Balconies at car roof level extend through the length of the shop in the center track bay and in two narrow bays outside the two outside tracks. These balconies are connected together by three equally spaced lift bridges over each side track, giving a continuous working floor at car roof level. In addition, scaffolds carried on brackets attached to the building posts and adjustable to any desired height, are located along both sides of each of the car tracks. Four specially designed electric hoists are provided over the side tracks to lift the car bodies from the trucks. These take the place of the usual jacks and, by their comparatively rapid operation, save considerable time in handling car bodies.

facilities provided to make the whole into a modern efficient plant.

The power requirements of the shops and terminal are supplied from outside. The increased power demand called for increased transformer and distribution capacity. To provide this, two new transformer houses have been added, so located as to minimize the length of the distribution lines.

Acetylene cutting and welding equipment is installed in the enginehouse and in the locomotive, blacksmith and car shops. This equipment is supplied through overhead pipes from an acetylene house on the west side of the yard, well away from other buildings.

The existing engine terminal had a 7-stall and a 29-stall enginehouse, served by a 100-ft. turntable. Twelve stalls of the latter house were used as a locomotive shop and were not available for regular enginehouse service. By throwing all shop work into the new locomotive shop, these stalls are released for regular enginehouse service. A 50 per cent increase in effective enginehouse capacity is thus attained without building any additional stall space. This is amply sufficient to take care of the requirements of the present and the immediate future.

The existing passenger car repair facilities were found to be adequate for immediate needs and substantially no change or addition is being made to them, with the exception of the addition of a car battery charging house at the south end of the coach yard, and the lengthening of the transfer table already mentioned. Other existing facilities, such as car wheel, carpenter shop, paint shop, storehouse and office space,

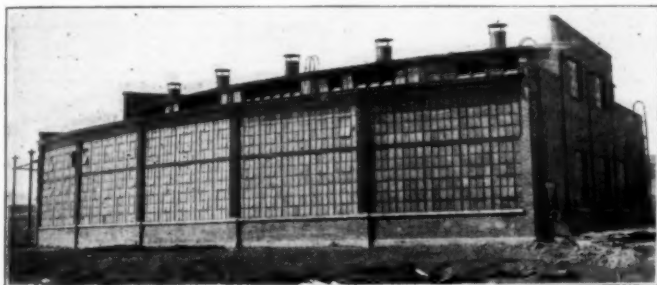


were found to be adequate for present and near future needs. Consequently no extension is being made to these departments.

In laying out this plant, consideration has been given not only to present requirements, but also to requirements several years in the future as well. The shops are all so located as to be susceptible of substantial extension without any change whatever in the general scheme, and with a minimum of interference to operations. The extension of the boiler house is large enough to permit the installation of 600 hp. additional boiler capacity. The same provision for future as well as present extensions has been carried out in the construction of sewer, water and other service facilities.

## The Salt Lake Installation

The new development at Salt Lake follows the general plan of the layout at Denver. At Salt Lake, however, the heavier grades and the greater curvature in the tributary



The Alamosa Engine House Shows Typical Construction with Large Areas of Glass

territory call for heavier boiler, tire, driving box and other heavy machinery repair work, so that more space has had to be given to these departments. An increase in storehouse space was also found necessary and the increasing number of 2-8-8-2 heavy Mallet locomotives called for an enginehouse of longer stall construction than that of the existing enginehouses to permit their rapid and economical handling. The arrangement of the existing yard also made the new Salt Lake development somewhat more difficult than that at Denver, and required a different grouping of the departments.

A locomotive shop, a steel and a wood car shop and a yard crane runway have been built of substantially the same design as those at Denver, together with a two-story storehouse, 50 ft. by 242 ft., an 18-stall enginehouse 126 ft. deep and an addition to the existing car wheel shop. As to Denver, the existing machine shop has been converted into a blacksmith shop, while an existing erection shop has been converted into a tank shop and a number of consequent additions and alterations have been made to other departments.

### Locomotive Shop Resembles That at Denver

The locomotive shop is of the same design and track layout as that at Denver. The tool department layout also copies that at Denver, though some of the individual tools are somewhat different, on account of the different class of locomotives to be handled. This shop is also served by two 120-ton Whiting cranes with 10-ton auxiliary hoists in the erecting bay and by a 10-ton crane in the machine tool bay. Electric and gasoline trucks also serve to transfer parts between the two bays and between the shop and the yard crane runway.

A yard crane runway with a 15-ton crane extends the full length of the shop along the machine shop side of the building and serves as a receiving and storage space for parts and materials. Beside the tracks already referred to two standard gage tracks extend through the shop and into the runway at right angles. These serve for the transportation of heavy parts. One of the yard tracks extends about 300 ft. from

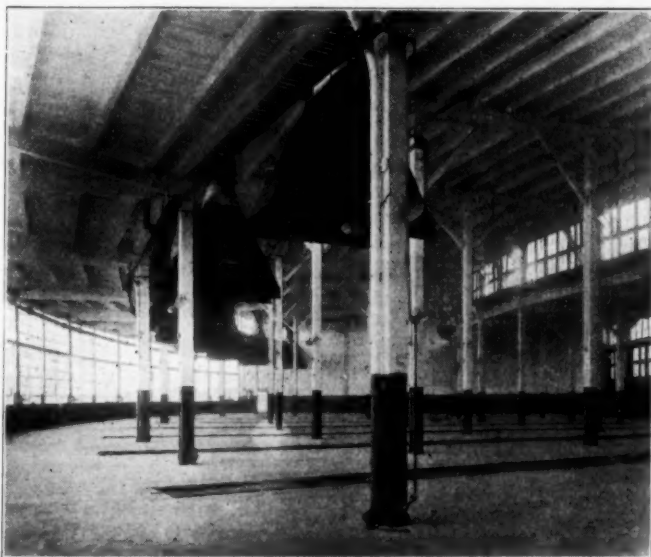
the north underneath this crane runway, for loading and unloading cars from outside.

The runway extends several bays beyond the end of the locomotive shop and also serves the blacksmith shop. This building was formerly the machine shop and lies on the same side of the runway, about 40 ft. clear to the south of the locomotive shop. This shop is equipped and departmentalized like that at Denver, although the different shape of the building calls for a slightly different arrangement of the groups, and no brass foundry is required at Salt Lake.

### Storehouse Was Rebuilt

The old storehouse, which was located on the side of the new locomotive shop, was no longer adequate for present needs. It was consequently torn down and a larger two-story storehouse, 50 ft. by 242 ft. was built in its place. This is a brick and timber mill construction building. Following the plan of grouping buildings as far as possible around the crane runway, it is located alongside the latter opposite the locomotive and blacksmith shops.

The storehouse is entirely surrounded by a concrete paved platform at car-floor level. This platform is 10 ft. wide along both sides of the building and is about 450 ft. long, providing liberal outdoor storage space at both ends of the building. The entire length of the east 10-ft. of this platform is under the crane runway and is also served by the yard track under the runway, which is located next to the



Interior of the Salt Lake City Engine House, Showing Natural Illumination

platform. The west side of the platform is served by another yard track throughout its length, giving ample unloading space.

The first floor of the storehouse is given over to storage space and the storekeeper's office. Only half of the second story, however, is storage space, the balance being given over to executive offices of the terminal. A centrally located elevator and stairway provide for vertical transportation.

The old engine terminal had an enginehouse of 5 stalls, one of 8 stalls and one of 16 stalls, all served by an 80-ft. turntable. While the number of stalls available was substantially sufficient for present needs, the length of stall in none of them was sufficient for adequate, economical service to the longer locomotives, of which increasing numbers are being assigned to the lines tributary to Salt Lake. Consequently, the old 16-stall house was torn down and its place taken by a new 18-stall house, 126 ft. deep on the same site, the old 80-ft. turntable being replaced by a new 110-ft. continuous

turntable of American Bridge Company design and manufacture.

### Enginehouse Includes Novel Features

As past experience with timber and concrete frame enginehouses has not shown advantages in concrete commensurate with its much greater first cost as compared with timber and as a well-built timber enginehouse of fire-resisting mill construction rarely burns, this new enginehouse is built of brick and fire-resisting mill construction and is divided into two equal parts by a fire wall. It is provided with a clerestory about 70 ft. wide, placed well toward the rear of the house, fully glazed on both sides and with operating sash to give good ventilation.

The economical and rapid handling of heavy modern engines with their greater weight of parts demands some kind of mechanical equipment for the dismantling, transportation and reassembling of these parts. Jib cranes and overhead cranes have been used for this to some extent, but their high cost, comparative slowness and lack of flexibility threw the balance in favor of the use of crane trucks for this purpose. These trucks, capable of picking up parts quickly at any point and transporting them to any other point inside or outside the house without transfer and independently of tracks, are rapid, flexible and economical.

To insure the satisfactory, permanent operation of these trucks, a paving brick floor on a reinforced concrete base was laid throughout the building. The use of reinforcement in an enginehouse floor is rather unusual, but a scheme was worked out whereby the reinforced floor slab, acting as a beam extending from pit to pit, and tied in with the reinforcing in the pits, stiffened the pits and took part of the jacking loads from them so that a much lighter cross-section of pit could be used than would otherwise be required. This reinforced floor slab also permitted the elimination of the concrete piers under the interior building posts, the latter being carried directly on the slab. Thus the whole floor and pit system, though much stronger, was no more expensive than the massive pits, unreinforced floor and building piers that would otherwise have been used.

The building is heated by direct radiation, coils being distributed under ledges at both sides of the pits and around the rear wall.

### Car Shops Similar to Those at Denver

The new steel freight car shop and wood freight car shop at Salt Lake are in every respect identical with those at Denver and need no further description. As at Denver, they are placed end to end, on opposite sides of a transfer table, which extends beyond the buildings under one of the yard tracks. The arrangement of the old yard did not, however, permit the connection together of all of the car departments over one transfer table without undue expense. This difficulty was met by installing a second transfer table across the north end of the wood car shop, connecting the latter with the planing mill. This transfer table also intersects three yard tracks, two of which lie on opposite sides of and adjacent to a material storage yard and the air brake department. A wheel track next to the transfer table between the two car shops extends from the shops eastward to the wheel storage yard, there intersecting a wheel track into the wheel shop. Thus all the freight car departments are effectively tied together in a system furnishing ready inter-transportation.

A 32-ft. by 40-ft. frame extension has been built to the wheel shop and the whole department has been thoroughly modernized. Overhead monorail and a transfer car take care of the handling of wheels and axles, both to and about the shop.

Modern tools have been installed, and the whole is so arranged as to reduce labor and motion to a minimum.

The south half of the air brake building to the east of the

steel car shop is given over to a service building 17-ft. by 50-ft. for car department employees.

All of the shops and the enginehouse are equipped with an oxy-acetylene system served through an overhead pipe distribution system from an acetylene plant in a light frame building to the south of the enginehouse.

It was not found necessary to add to the existing boiler house at Salt Lake as there was room in the building for the additional 300 hp. horizontal water tube boiler which was installed, with chain grade stokers, pumps, feed water heater and other modern accessory equipment.

The old locomotive erection shop, which is an extension of the old machine shop (now the blacksmith shop) has been converted into a tank shop, substantially without alteration. It is served by seven tracks from the turntable, one of which runs under an electric hoist and another extends through the



Section Through Wood Car Shop      Section Through Steel Car Shop

shop and ties up with the yard track system. An extension of the tank shop to the north serves as a club and locker room for engine department employees.

The passenger car departments at Salt Lake, as at Denver, are adequate for present and immediate future needs and have not been added to or altered. It is believed that with the present additions and improvements, including also the extensive improvement of the underground and other service facilities, the terminal and plant will be adequate to meet requirements for several years to come. The departments have also been so laid out here that any or all of them may be extended when future needs require without interference with the general plan.

## Improvements at Other Points

Coincident with the consideration of plans for improving the shop and terminal facilities at Denver and Salt Lake consideration was given to Grand Junction, not only as an intermediate station of some present importance, but also as one which will grow rapidly in importance with the development of Northwestern Colorado, and which will probably in time require facilities nearly as extensive as those of the present main terminals at Denver and Salt Lake.

### A New Shop at Grand Junction

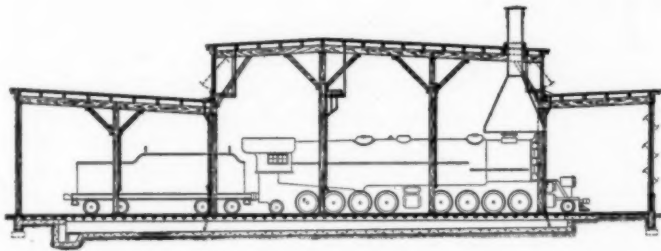
With this end in view, a new machine and erecting shop has been built at Grand Junction, which, while complete in itself at present, can easily be added to in units as the need arises. This will take care of intermediate repairs and takes the place of an obsolete shop which has been given over to heavy freight car repairs, the latter not yet being sufficiently numerous at Grand Junction to warrant heavy plant expenditure. Existing engine terminal facilities at Grand Junction were adequate as to the number of stalls but some of the 2-6-6-2 Mallet and Mountain type engines on the division tributary to Grand Junction required a longer turntable and longer stalls for their efficient care. Six stalls of the existing enginehouse were, therefore, lengthened 15 ft. (to a total of 112 ft.). For immediate needs a 110-ft. three-



point turntable was installed in place of an old 80-ft. table. A modern hot water boiler washout system has also been put into service, together with a new indirect heating system and other minor service facilities in connection with the enginehouse. These facilities required more boiler capacity and a small addition to the existing boiler plant was built.

The new locomotive shop is a steel frame Robertson process metal-covered building 106-ft. by 247-ft. in area. It is divided into two longitudinal bays, one of which is an erecting and heavy machine bay; the other a light machine tool bay.

The erecting bay is served by two tracks extending its full length, connecting into the rear of the enginehouse at one



Section Through Typical Enginehouse

end and into the yard at the other. One of these tracks runs over a 60-ft. engine pit at each end of the shop, while the other runs over a locomotive hoist pit at one end of the shop and an engine pit at the other.

A 15-ton overhead travelling crane of 75-ft. span serves the entire erection bay as well as the west 20-ft. of the machine tool bay, and is used for longitudinal transportation of heavy parts in either bay and also for transverse transportation between the two bays.

The machine tool bay consists of a blacksmith shop, a boiler and flue shop, a machine shop, a tin shop and electric and air brake departments. The longitudinal arrangement of the shop admits of easy, direct access to each department from the erecting bay without interference.

A good working surface is provided by a creosoted wood block floor on a reinforced concrete base under the whole building except the blacksmith shop. Lighting is provided by liberal window space along both sides of the building and by an overhead monitor. The building is heated by hot blast heating units, conveniently distributed. A locker and washroom in a corner of the shop furnishes convenient facilities for the care of the men.

An additional 120 hp. boiler and steel stack has been installed in a small extension to the existing powerhouse to supply the additional heating requirements of the new shop and of a new heating system installed in the enginehouse and in the old shop.

The departments, though not extensive as yet, are well spread out with ample space in which they can be developed into a large modern plant when the need arises.

#### The Improvements at Salida

Salida is an important intermediate station on the main line between Denver and Salt Lake. Its development has in general followed that of Grand Junction, with the difference that as Salida is a junction point between standard and narrow gage lines, provision had to be made for the repair of both kinds of locomotives. With this end in view a new locomotive shop like that at Grand Junction was built, having one pit for narrow gage engines, the other two pits and the hoist pit being standard gage. An old machine and erecting shop was also converted into a car repair shop. An old narrow gage enginehouse, a large part of which had already been given over to general utility service has been entirely abandoned for enginehouse service and six stalls in

the old standard gage enginehouse have been converted to narrow gage service. To replace these stalls and meet present requirements, a new enginehouse of seven standard and one narrow gage stalls has been built, centering on the same turntable. The idea of this rearrangement is to centralize all engine service and repair facilities for both classes of engines. A new power plant has been built and in order to facilitate transfer from narrow to standard gage cars, an ore car dumper has been installed.

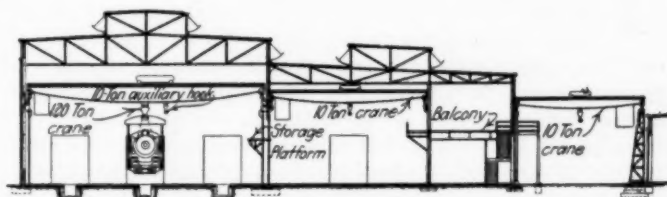
The locomotive shop is practically identical in design and layout with that at Grand Junction, with the exception of the fact that one of the dismantling and assembly pits is constructed for narrow gage service and some of the tool equipment is slightly different to take care of this class of work. It is located in the rear of the new enginehouse, being connected with the latter by a narrow and a standard gage track extending through locomotive doors in the rear wall of the enginehouse.

The design of the new enginehouse is identical with that of Salt Lake, being 126 ft. deep, with 100 ft. pits to take care of the long 2-8-8-2 Mallet locomotives. As at Salt Lake, crane trucks are provided for handling parts, the whole being equipped with a heavy brick and reinforced concrete floor integral with the pits. A hot water boiler washing plant has been installed, centrally located to serve both the old and the new enginehouse.

These plant extensions necessitated the construction of a new power plant, which consisted of a brick and steel frame building 35 ft. by 68 ft. in area, in which three 200 hp. horizontal tubular boilers with necessary modern accessories were installed. This gives a capacity of 600 hp. at normal rating. An elevated timber trestle was built to take care of the coal supply for the plant.

#### Roundhouse Stalls Were Lengthened at Alamosa

Alamosa is another junction point between standard and narrow gage lines. The existing terminal at this point was more nearly adequate to present requirements than any of the other terminals affected. Being off the main line, the traffic is not nearly as heavy, even on the standard gage, as at Salida and Grand Junction. Narrow gage terminal facilities were



Section Through Locomotive Shop at Denver

found in the main to be amply adequate for present needs, and with the exception of the replacement of a few obsolete tools with more modern ones, were not improved.

In the interest of economy and speed of operation, there was, however, need for additional and longer standard gage enginehouse space, which was met by building a five-stall house 105-ft. deep. This house, except for the shorter stalls, is of the same design and equipment as those built at Salt Lake and Salida. While the longest standard gage engines on divisions tributary to Alamosa were too long for convenient handling in the existing house, they are not long enough to require the great depth of house built at the other points. It was also found necessary to replace an old 65-ft. turntable with an 80-ft. balanced-type table.

A hot water boiler washout plant of 20-stall capacity was installed centrally on the outer circumference of the combined old and new enginehouses for service to both of them. The old enginehouse was inadequately heated, resulting in costly delays while locomotives were being thawed out in

winter. A steam heating system for using exhaust steam was, therefore, installed to eliminate these delays and to increase the efficiency of roundhouse crews.

Tank shop facilities were also required at Alamosa. The two bays of the old blacksmith shop next to the locomotive erecting shop were turned over to tank shop service and an addition 42 ft. by 63 ft. was built onto the other end of the blacksmith shop to regain this space lost to the latter. This rearrangement was made to keep the tank and locomotive shops close together and to cut down the length of haul of tanks on the transfer table. The transfer table pit was also extended to serve the addition to the blacksmith shop, connecting all of the locomotive repair departments with each other and with the turntable.

A new locomotive repair department service building was built adjacent to the machine shop and centrally located with reference to the locomotive repair departments. Considerable work was done in extending and rehabilitating sewer, water and other service facilities.

The existing car repair facilities, both freight and passenger, were found to be ample for present needs and well laid out with reference to future extension, and no development was found necessary for the present in these departments. The existing boiler plant was also found to be amply adequate and with the exception of minor alterations in the way of improving the draft, was not changed or added to.

This rehabilitation program was initiated under the direction of J. H. Young, who was receiver of the Denver & Rio Grande Western until August 1, 1923, and was carried through to completion by his successor, T. H. Beacom. It was handled under the supervision of Arthur Ridgway, chief engineer of the road, and under the immediate direction of Battey and Kipp, consulting and constructing engineers, Chicago, who designed and built these structures.

## Regional Conference with Shippers at New York

THE MIDDLE ATLANTIC STATES REGIONAL ADVISORY BOARD held a largely attended meeting at the Hotel Commodore, New York City, on May 8 and the discussions were participated in by leading railroad officers and by representatives of some of the largest shippers in the eastern region. W. J. L. Banham, general chairman of the board, presided, and in his address outlined the very satisfactory progress which has been made in the organization of advisory boards all over the country. He made a strong appeal for active participation of all members in the main present object of the organization which is to do everything possible in the way of equalizing freight traffic for the ensuing six months so as to avoid congestion in October and November. He looked upon the problem of proper distribution of tonnage as the most vital economic question now before the industrial world.

Representatives of the New York Central, the Pennsylvania, the Erie, the Baltimore & Ohio and other railroads assured the meeting of their ability to handle any amount of freight offered, all the principal roads having at present large numbers of idle freight cars.

The discussion on store door delivery was followed by the appointment of a committee to study the present aspect of this problem, of which W. H. Connell, assistant manager of the traffic bureau of the Merchants' Association, New York City, is chairman.

A committee to consider a plan for the promotion of a campaign to increase shipments of freight in the dull months, to insure the benefits of a more normal movement in the autumn, was appointed, consisting of F. A. Bedford, American Bridge

Company, Philadelphia; S. B. Crowell, P. M. Ripley, M. E. Stringer, A. H. Campbell and Harry Hall; T. C. Powell (Erie R. R.), R. C. Wright (Penn. R. R.), J. E. Roberts (D. & H.), R. B. White (B. & O.) and G. Metzman (N. Y. C.).

J. E. Roberts, superintendent of transportation of the D. & H. Company, read a paper on heavier loading, an abstract of which is given under another head.

## Railroad Legislation

WASHINGTON, D. C.

THE SENATE on May 12 passed with practically no debate Senate Joint Resolution 107, intended to direct the Interstate Commerce Commission to reduce freight rates for the benefit of agriculture in a time of depression, although the direction is considerably qualified. The resolution as passed was prepared jointly by Chairman Smith and former Chairman Cummins of the committee on interstate commerce as a substitute for the resolution to the same end introduced by Senator Smith and reported favorably by the committee some time ago. The principal change consists in a brief reference to industries other than agriculture, directing the commission to consider "the conditions which at any given time prevail in our several industries," although the most direct language in the resolution refers to agriculture. The text is as follows:

That it is hereby declared to be the true policy in rate making to be pursued by the Interstate Commerce Commission in adjusting freight rates, that the conditions which at any given time prevail in our several industries should be considered, in so far as it is legally possible to do so, to the end that commodities may freely move with fair profit to the producer and sold at a reasonable price to the consumer.

It is further declared that agriculture is the basic industry of this country; and that it is the policy of Congress to promote, encourage, and foster that industry, and especially in rate making during the existing depression in agriculture. In furtherance of these policies the Interstate Commerce Commission is hereby directed, with the least practicable delay, to effect such lawful changes in the rate structure of the country as will promote the freedom of movement by common carriers of the products of agriculture, including livestock, at the lowest possible lawful rates compatible with the maintenance of adequate transportation service: Provided, That no investigation or proceeding resulting from the adoption of this resolution shall be permitted to delay the decision of cases now pending before the commission involving rates on products of agriculture, and the policy herein stated shall be applied in such determination as soon as possible.

Senator Smith in explaining the resolution said that "really there is no new proposition involved in it. It is simply a direction to the Interstate Commerce Commission that whenever there is a depression in any of the basic industries of the United States, as there has been in agriculture, the commission should take cognizance thereof, and regulate the rates so as to facilitate the movement of the products of that industry."

Senator Cummins expressed the belief that the substitute announces a sound principle of rate making. "I think it is applicable not only to the agricultural situation as we now find it," he said, "but it is applicable as well to the movement of every other great commodity, and I very sincerely hope the resolution will be adopted. The truth is that in the movement of commodities throughout the United States, railways and the regulating commissions of the government ought to give attention to the conditions of the particular industry or interest. When agriculture is depressed—that is to say, when farmers are unable to sell the products of their farms at a profit in order to encourage the continuation of the industry—then freight rates upon agricultural products should go down to the lowest possible point. Undoubtedly the Interstate Commerce Commission has complete and adequate power to



reduce freight rates in exact accordance with the declaration made by this joint resolution, and while the Interstate Commerce Commission has, since the first of September, 1920, reduced rates upon agricultural products very markedly, yet I think it is wise again to call the attention of the commission and of the country to the principle which should underlie rate making in basic commodities.

Senator Bruce, a member of the committee on interstate commerce said he had concurred in the favorable report on this joint resolution: "I think that here is at least one thing that we can do for agriculture at the present time, and that a practical, timely thing. It is true that the Interstate Commerce Commission has the full power now to regulate railway rates on agricultural products, but the tendency of this resolution would be to strengthen its hands and to make it just a little quicker than it would otherwise be to give some sort of lawful reasonable preference at this conjuncture to agricultural products when in course of transportation."

When this resolution reaches the House it will encounter a resolution introduced by Representative Hoch of a much broader scope, directing the Interstate Commerce Commission to make a thorough investigation of the entire rate structure, giving due regard, among other factors, to the general and comparative levels in market value of various classes of commodities over a period of years.

This was favorably reported to the House on May 13 by the committee on interstate and foreign commerce, which held hearings on it during April.

The Senate committee on interstate commerce has not held a meeting since the close of its hearing on bills to repeal section 15a, although it was expected that it would attempt to reach an agreement on a bill proposing a substitute for the present section. It is understood that some of its members were more interested in the Smith resolution as carrying the possibility of some reduction in rates on agricultural products, as Congress has had very little demand for rate reductions from other shippers.

A movement to apply to a bill to reduce railroad rates the same rule under which the Barkley labor bill was taken from the committee on interstate commerce and an effort was made to pass it in the House without hearings, has been started by Representative Shallenberger of Nebraska. He has been circulating, in an effort to obtain the signatures of 150 members of the House, a motion to discharge the committee from the consideration of the bill introduced by Representative Huddleston to not only repeal section 15a but also to restore the rates, fares and charges in effect prior to the passage of the transportation act, that is, those in effect prior to the decision of the Interstate Commerce Commission in Ex Parte 74 in August, 1920, which was intended to advance rates to make up for the increases in expenses incurred during the latter part of the federal control period and also the \$600,000,000 wage increase made in 1920 by the Railroad Labor Board. If the necessary signatures to such a motion are obtained the motion would probably come up for consideration on May 19, the day already fixed for a three-hour debate with five-minute speeches on amendments, on the Barkley bill.

Senator Pittman of Nevada on May 12 proposed to pass the Gooding long and short haul clause bill by attaching it as a rider to the War Department appropriation bill, which was about to be passed. The senator made a speech and there was considerable discussion of the subject but its consideration was put over for another day.

Senator Pittman said that it is now so late in the session as to be impossible to pass the Gooding bill by itself before adjournment and that action is necessary because the applications of the railroads for fourth section relief on rates on 43 commodities to the Pacific coast is now pending before the Interstate Commerce Commission. Senator Bruce opposed the consideration of the amendment at the time saying that

he knew that several senators strongly opposed to it were not present.

On May 13 Senators Pittman and Gooding made speeches on the subject but Senator Gooding did not conclude.

The House on May 13 passed by a vote of 149 to 146 and after a lively debate, the bill for the purchase of the Cape Cod canal property by the government for \$11,500,000, ratifying the contract executed on July 29, 1921 by the Secretary of War and the Boston, New York & Cape Cod Canal Company with an amendment by which the canal company would waive all claims against the government.

While Congressional leaders are planning an adjournment about June 7, it is understood that there is some opposition to this plan among the "progressives" and Senator La Follette, who has been ill for a large part of the session, is reported to have sent word from Atlantic City to his followers to oppose an adjournment without passage of the Howell-Barkley bill and some measure to reduce railroad rates.

## Heavier Loading of Cars — Shippers Induced to Help\*

By J. E. Roberts

**H**EAVER LOADING may be obtained by arbitrarily increasing the minimum rates at which freight will be carried at carload rates or by the solicitation of the voluntary co-operation of shippers. From the standpoint of the railroads and of many shippers, the first method is the more desirable in that it would not disturb equality of competitive conditions as between shippers. Generally speaking, it is found that dealers in brick, cement, fertilizer, grain, lumber and sugar really prefer to ship 25 or 30 tons rather than 15 or 20 tons provided only that no competitor shall be able to quote the same customer the same prices on a smaller carload.

The average freight car today is capable of carrying 49 per cent more freight than was possible 20 years ago, but the average total weight loaded in the car in 1903 was 17.6 tons, and in 1922 was 24.3 tons, an increase of only 38 per cent, indicating that the same progress has not been made in the loading of this equipment as has been accomplished in increasing its capacity. The per cent of capacity utilized shows a gradual decrease from 1903 to 1916 when apparently under the spur of war necessity it increased for three years until the end of 1918, since which time it has again been on the decrease with the exception of 1920 which was a year of unusually heavy traffic and shippers to some extent responded to the possibilities of heavier car loading. There have been car surplusages as high as 493,000 cars, and the annual interest charges alone on the present day value of those cars is approximately \$50,000,000 which is necessarily reflected in the freight rates, and therefore in the end is paid by the public. We can strengthen road beds, and build locomotives of larger capacity, but the greatest opportunity for economy is in taking advantage of the full capacity of the cars available for service and which in 1923 were only utilized to 57.9 per cent of their full carrying possibilities. The requirement for taking advantage of full capacity of cars should be a universal obligation, the same as the payment of fair rates; otherwise the efforts of conscientious shippers realizing the necessity for full utilization of freight car capacity could be nullified by wasteful practices on the part of less responsible shippers.

The Delaware & Hudson Company has found shippers and receivers of freight willing to co-operate in obtaining

\*Abstract of a paper by the superintendent of transportation of the Delaware & Hudson Company, read at the meeting of the Middle Atlantic States Regional Advisory Board, at New York, on May 8.

maximum utilization of cars. For the so-called "freight commodities"—all commodities except coal—originating on our line the tons per car for the past three years have been 26.4—28.9—31.8 tons respectively. In other words, in 1923 we were able to handle practically the same amount of freight in four cars as was handled in five in 1921. This is equivalent to increasing our car supply 20 per cent, reducing congestion at loading and unloading points, and reducing operating costs by the elimination of the expense of hauling the fifth car in both directions. The loading of anthracite coal, which is the principal commodity originated on our lines, has been excluded from these figures, as the total carrying capacity of the coal cars loaded has been utilized to between 97 and 98 per cent for a number of years. This is a result of a clause in all D. & H. tariffs for anthracite coal to the effect that the marked capacity of the car shall be the minimum carload weight, except that actual weight will apply when car is loaded to full cubical or visible capacity. This is a measure which has resulted in no appreciable hardship to either shippers or receivers and has accomplished to a high degree the economy desired. The results here stated should not be taken as indicative of the country at large, as our records show that the tons per car for traffic originated on the D. & H. in 1921 exceeded that received by us from connections by 13.8 per cent; in 1922 by 26.8 per cent, and in 1923 by 37.7 per cent. If we can get these results on the D. & H. by the voluntary co-operation of shippers, I judge the tariff minimums could be increased by one-third on most commodities without any very marked hardship.

Now let us examine the facts with reference to the subject of present minimum weights. The Consolidated Classification has a total of 5,112 commodities for which carload rates are given, and of these 66 per cent have carload ratings of 30,000 lb. or less; 89 per cent have carload ratings of 36,000 lb. or less, and 95 per cent have carload ratings of 40,000 lb. or less. \* \* \* What the railway can accomplish depends largely on you shippers. As your chairman has lately said, it is time the buyers and sellers of transportation got together for the purpose of solving their mutual problems. Skill in conducting transportation is about the only function of the railroads which is not regulated to a prohibitive extent, and in periods when commercial activity is at its height efficient transportation is detrimentally affected by the necessity of moving cars which are not loaded to a reasonable proportion of their full journal or cubical capacity. Probably the greatest assistance to industries and railways alike would result from approaching this question from the standpoint of an increase in carload minimums on traffic destined to that more densely populated section of the country known as Official Classification territory, and especially to New England and the middle Atlantic Seaboard where the density of population is the greatest and where the experience of the past indicates that deliveries of commodities first begin to slow up and delivery tracks become congested. So it seems to me that this is a subject of joint interest, and provided only that the level of competition is maintained the carload minimums should utilize the car capacity up to a point where the expense of loading becomes the governing factor. We ought, with mutual advantage, to approach this subject with that end in view.

We have grown into a great industrial nation; low carload minimums may have been, and undoubtedly were, favorable to industry while it was in its infancy, but today in Official Classification territory they are a menace.

THE MISSOURI PACIFIC moved 117,837 carloads of revenue freight during the month of April, compared with 103,146 carloads during April, 1923, an increase of 14.2 per cent. The number of miles per car per day reached 30.96, as compared with 25.43 for the same month last year.

## Air Brake Association Completes Convention

AT THE CLOSING SESSION of the Air Brake Association Convention, held at Montreal, Que., on May 6 to 8, a partial report of which appeared in the May 10 issue, page 1149, the following papers were read and discussed: Freight Car Foundation Brake Designs, by W. G. Stenason (Canadian Pacific); Condemning Limits of A. R. A. Standard Triple Valve Parts, a committee report read by R. M. Long (P. & L. E.); The Triple Valve Test Rack Operator, presented by the North-West Air Brake Club and read by Mark Purcell (Northern Pacific); Report of the Committee on Recommended Practices, and Air Brake Tests of Locomotive and Trains in accordance with the United States Government Laws, by the Dixie Air Brake Club.

President Wood in closing the convention reviewed the various phases of the work of the association, in which he stressed the results that were being accomplished by holding the convention in different sections of the country. The increased attendance at the Montreal convention, a large part of which consisted of members from the eastern section of the United States and Canada, showed that a larger proportion of the membership was able to profit by such a policy. It was decided to hold the 1925 convention in Los Angeles, Calif.

### Election of Officers

F. M. Nellis (Westinghouse Air Brake Company) was elected secretary of the association for life. The following officers were elected for the ensuing year: President, C. M. Kidd, N. & W.; first vice-president, R. C. Burns, Pennsylvania; second vice-president, M. S. Belk, Southern; third vice-president, H. A. Clark, Soo Lines. The following were elected members of the Executive Committee: H. L. Sandhass, C. R. R. of N. J.; W. W. White, M. C.; H. A. Flynn, D. & H.; William Clegg, C. N., and R. M. Long, P. & L. E.

### Excursion to St. Anne de Beaupré

A feature of the convention was a trip to Quebec and St. Anne de Beaupré. This excursion was conducted jointly by the managements of the Canadian National and Canadian Pacific who provided a special train, the observation car of which was equipped with a radio receiving set. A. J. Hills, assistant to the vice-president, Canadian National, broadcasted an address to the members, a part of which is as follows:

"It is, I think, quite remarkable that the use of air for braking power has so well withstood the test of time. In the midst of the greatest advances in electrical and other mechanical development, compressed air as a force for applying and releasing brakes holds practically the entire field against all comers. While in almost every mechanical development electricity assists or performs, when it comes to stopping trains by the application of brakes, the actual work is done without electrical aid. Engine and car brake equipment has had to be developed to keep up with the great advances made in weights of trains and it is a remarkable tribute to those who have had the work in hand that it has kept pace so well with general railway development.

"It seems that we are on the threshold of a new great development whereby trains will be controlled by air orders as well as by air brakes. Radio work has shown such wonderful progress lately that the management of the Canadian National decided that it would be worth while to get in the game. This demonstration of what can be done in sending to a moving train will, we hope, prove to be of interest to you."



# How Signals Have Relieved Congestion

## Second Tracking Postponed, Yard Capacity Increased and Train Delays Reduced by This Means

**W**HAT OPERATING OFFICERS REALIZE the benefits of signals in increasing track capacity and relieving congestion is evidenced by information included in articles submitted in the recent contest on "What Signals Have Done to Help Your Road," conducted by the *Railway Age* and *Railway Signaling*. The prize winning articles were published in the *Railway Age* for April 12. Other articles received in this contest, explaining operating results obtained, follow.

### Signals and Interlockers Permit Closer Spacing of Trains

By Superintendent of Transportation

On the A. & C. railroad passenger trains, with a scheduled speed of 37 miles per hour and a maximum speed of 50 miles per hour, are dispatched as close as 5 min. apart. Safe operation is possible only because of automatic block signals, which space the trains properly so that 12 or more trains can be dispatched every hour, while under standard rules with manual block not more than 6 could go forward.

On this same stretch of double track, freight trains are run in the direction of traffic without orders, other than an "overdue" on passenger trains, which is indicated by the clear position of the home interlocker signal at the point of departure from the yard. If for any reason a freight train gets so close ahead of some passenger train that the dispatcher wishes to instruct it to get out of the way at a station where it would pass the switch before arriving at the office, he can, through the operator, display a "take siding" signal by a special form of semaphore on the automatic block signal mast nearest to the turn out switch. Thus quick and last moment communication is given to the freight train as to a desired move, which, without this signal, would have to be transmitted by message at the preceding office. Several of these signals are installed at turn outs on descending grades, where the grade is such that if a tonnage train passed the switch and proceeded to the office it would be impossible to back it into the siding.

On the double track portion of the A. & C. road automatic signals, because of the information given as to the location of the train ahead, make it possible to permit following trains to regard a burning fusee in the same class as an automatic signal in the stop position; that is, as a stop and proceed signal. With passenger trains running five minutes apart this method of operation is essential if congestion is to be avoided. Almost any superintendent can testify to the congestion resulting on a busy division when a 95-car tonnage train pulls out a couple of drawheads, doubles a hill or is otherwise delayed because of unexpected stops. Even the lay reader can grasp the value of signals which "keep trains moving."

#### How an Interlocker Helps Yard Operation

At one important yard on the A. & C. road there is an interlocking plant at the south entrance, while hand-thrown switches are used at the north end. The time consumed by 75-car trains leaving the yard shows a saving of from 15 to 20 min. per train in favor of those leaving via the outlet protected by the interlocking plant. This permits a following train to enter the yard under congested conditions 15

to 20 min. sooner, so that a saving in time to the one train going out may actually result in a double saving in a busy yard.

The signals at interlocking plants at main line junctions on the A. & C. railroad have done away with the stopping for orders of branch line trains coming on to the main line, for, as explained above, a clear home signal is a permit to proceed; this being another instance of quick communication which, without signals, could only be obtained by a stop and a visit to the office to register and find out about overdue trains.

#### Record of Time Saved by Interlocking of Draw Bridge

The results of a check made before and after interlocking a certain drawbridge on the A. & C. road, to ascertain the time saved by the plant, should be of interest. The time of several trains was carefully noted between mile posts two miles apart on either side of the drawbridge before and after the interlocking plant was installed. The time saved by the new method ran from 3 min. and 26 sec. to 5 min. and 47 sec. At the point in question the saving of the stop was particularly important in relieving congestion since the bridge was near the foot of a ruling grade in one direction and the elimination of the stop reduced materially the doubling of tonnage trains.

On the A. & C. several important rivers are crossed by single track viaducts from one to three miles long, in what is double track territory elsewhere. These crossings are protected by absolute-permissive block, single track signals, which give absolute protection against opposing trains, but permit the clearing of any congestion of trains in one direction by close following movements, which in turn are protected from each other by automatic electric block signals. Most of these viaducts have man-operated interlocking towers at both ends of the double track, but in a recent case, where new double track has been constructed on both sides of a three-mile viaduct, modern signaling has made possible the elimination of the tower at one end of viaduct. By this arrangement the switches and signals are electrically operated and are controlled from the tower at the other end of the viaduct, some three miles away. Here is one case where "two minds are not better than one," since the two operators three miles apart, who necessarily must take time to get into accord (before a train can be permitted to go) would not ordinarily be as efficient as one man controlling the whole territory. With this new installation the delay necessary for communication between operators is eliminated by the faster communication of electric wires, which show at all times, to the one controlling operator, the exact situation existing at both ends of the viaduct, all of which tends to speed up transportation and reduce congestion.

#### Tonnage Signals Prevent Train Stops on Grades

At points where congestion may occur often, special signals of a less expensive nature than interlocking signals can be installed in such a way as to afford distinct relief. For example, on the A. & C. road the hills are short, and it is the general practice to load engines with more tonnage than can be started on the ruling grade. This has led to the adoption of "tonnage signals" in connection with automatic block signals which, in effect, give permission to such trains to proceed at low speed under full control past a red signal without coming to a full stop. This method of operation

prevents congestion which would be caused by a tonnage train having to stop and then double away.

At places where long freight trains that are being held out of yards block several important highway crossings, we have installed special signals to give these trains advance notice of the readiness of the yard to let them in. The elimination of congestion to street traffic by the use of these signals creates good will in a community towards the railroad.

Although the A. & C. system does not handle a heavy traffic its service is of an exacting nature which requires quick movement. Therefore, the signals do more, under present traffic conditions, to advance transportation than to prevent congestion. However, congestion may be defined as any condition which stops transportation, whether it be the bunching of many trains at one point, or the stopping of one train at many points, for lack of quick, sure communication such as is offered by modern signaling.

## Signaling Postponed Heavier Expenditures on N. & W.

By R. H. Smith

Division Superintendent, Norfolk & Western, Roanoke, Va.

Absolute permissive automatic block signals have accomplished excellent results for the Norfolk & Western on 108 miles of single track on a 150-mile engine district, the first 42 miles of which is on double track. The traffic consists of 5 passenger trains each way daily and freight traffic varying with business, but amounting at times to 10 trains each way daily, making a total of 30 train movements. The entire district is on a broken mountain grade line with a total rise in one direction of over 2,200 ft. in long grades and in the other direction of about 1,940 ft. This rise is exclusive of stretches of grades due to short dips, there being corresponding long descending grades in each direction.

Following the installation of signals, the use of the "31" order has been discontinued, thereby eliminating train stops for train orders and attendant delays, and thus reducing the wear and tear on equipment. The signals have reduced the long delays to freight trains when clearing for passenger trains on absolute block, especially at night when some telegraph offices are closed. The necessity for maintaining many open telegraph offices, particularly at night, is now eliminated, resulting in marked operating economies.

We are using heavier but slower motive power with greater train tonnage and double-heading has been practically eliminated, coincident with the increase of average train speed and reduction of overtime hours.

On this 150-mile mountain grade engine district, a tie-up of a train for rest between terminals, in accordance with the hours of service law, is now a rare occurrence. The signals have also effected an absolute check against the possibility of a main failure in handling train orders or in observing the rights of superior trains, which possibility always exists on even the best regulated manual block single track lines. In brief, there has been a marked increase in the capacity of the line with a correspondent postponement of heavy expenditures for double track work.

## Signaling Postpones Double Track

By L. L. Banks

Passenger Trainmaster, Pennsylvania System, Altoona, Pa.

On the Altoona division of the Pennsylvania Railroad signaling has relieved congestion on 3.3 miles of single track between Eldorado and New Portage Junction on the Hollidaysburg branch. This section handles all movements between two big yards, Altoona and Hollidaysburg, and all passenger trains moving between Altoona and the various branches of

the Middle division. Several years ago consideration was given to the question of double tracking this section owing to the difficulty and delay experienced in the operation of traffic. At that time there were 18 regular passenger trains, 9 each way, between 5 a. m. and 7 p. m., and during certain periods of the day, when passenger trains were scheduled at close intervals, there was little opportunity to handle any freight movements by the use of train orders. However, in view of the expense involved it was decided to postpone this action and as a temporary expedient to install controlled manual block and automatic signals to govern movements in either direction. This change, which was completed on September 2, 1910, provided the necessary relief and the additional track has not yet been built, notwithstanding the fact that traffic over this branch has increased by the operation of four passenger trains and two local freight trains.

The other point of congestion was a section of three-track 0.8 miles long on the mainline between Tyrone, Pa., and Spruce Creek, all other main line portions of the division being four-track. Prior to July 21, 1913, the three-track section was operated under manual block rules, the tracks being used as follows: No. 1, track eastward, passenger and freight; No. 2, track westward, freight; No. 3, track westward, passenger. There was a great deal of delay to eastward freight movements at Tyrone during periods when eastward passenger trains were moving at frequent intervals. While the train dispatcher frequently advanced the freight trains by moving them against the current of traffic on No. 2 track when conditions would permit, it required too much time to get an eastward train started by means of a train order after a westward movement was completed. Therefore, in many cases, freight trains were held for passenger trains, because of the fact that there was not sufficient time to make the cross-over movement from the four-track to the three-track section without delaying passenger trains. To make matters worse, eastbound freight trains held at this point were obliged to cut public crossings. This congested condition was greatly relieved by the installation of controlled manual block on No. 2 track on July 21, 1913.

The installation of automatic signals on the main line portion of the division, which was completed on September 1, 1914, has greatly facilitated the movement of trains in general. Automatic signals make it possible to schedule passenger trains closer together, causing less interference to freight movements. Freight trains, by reason of receiving definite information conveyed by automatic signal indication as to location of trains ahead, are enabled to make much better time than was possible under manual block system rules when, on account of following trains under permissive signals, it was necessary to move through entire blocks of five or six miles in length at reduced speed.



Bridge Recently Completed at Victoria, B. C., Used by the Esquimalt & Nanaimo, Which Is Operated by the C. P. R.



# Chamber of Commerce Discusses Transportation

## Resolutions Adopted at Annual Convention Oppose Changes in Esch-Cummins Bill at This Time

**M**EASURES for the development of a national transportation policy looking toward the maintenance of properly co-ordinated railway, water and highway transportation systems, were urged at the twelfth annual convention of the Chamber of Commerce of the United States which was held at Cleveland, Ohio, on May 6 to 8. Interest in this phase of the chamber's work centered primarily on the results of the vote on referendum No. 43 covering the report of an extensive study by the Committee on Transportation, all 14 of the recommendations of the committee being carried by large majorities. "This transportation study," said Julius H. Barnes in his presidential address before the convention, "marks a forward step in methods of consideration of important public questions by the business community. The current influence of these studies in crystallizing a sound public opinion, setting at rest the ghost of government ownership, promoting a fair attitude toward the carriers, lending them confidence in a splendidly executed program of re-equipment and improvement of service, stimulating the co-operative relation of the motor truck, and developing a sounder understanding of our waterway problems—these results have a significance difficult to evaluate fully. Service of this type, rendered by the business community, offers encouraging evidence of the value of the National organization."

The propositions submitted by the committee, together with the records of the votes on each, are as follows:

### Results of the Referendum

The committee recommended:

I.—That the national transportation policy should aim at the development and maintenance of an adequate system of rail, water and highway transportation with full co-operative service of all agencies that will contribute to economy and efficiency. In favor, 1,879½; opposed, 89½.

II.—That the important principles of the Transportation Act of 1920 be continued without change until there has been further experience. In favor, 1,857; opposed, 122.

III.—That the principle of recapture of a fair proportion of excess railroad earnings should be maintained in the public interest as essential to the rule of rate making. In favor, 1,392½; opposed, 542½.

IV.—Supplementary legislation in harmony with the general principles of the Transportation Act to facilitate consolidations by voluntary action subject to the approval of the Interstate Commerce Commission. In favor, 1,475; opposed, 477.

V.—That the policy of connecting and co-ordinating terminal facilities, with provisions for joint use prescribed by the Interstate Commerce Commission, be applied as rapidly as practicable. In favor 1,691½; opposed, 271½.

VI.—That, in place of any attempt to deal with rates and other problems of regulation of common carriers through legislation—necessarily inelastic—such problems be handled by properly constituted federal and state administrative agencies. In favor, 1,906½; opposed, 67½.

VII.—That instead of any attempt at general reduction at the present time the existing administrative agencies, under their established methods and with all possible dispatch consistent with proper study and investigation, proceed with the readjustment of relative freight rates. In favor, 1,686; opposed, 231.

VIII.—That Congress should direct the army engineers to make a comprehensive survey and present a definite plan and schedule of priorities for waterway development. In favor, 1,742; opposed, 240.

IX.—That, to determine more fully the possibilities of inland waterway transport under private operation and thus enable the government the sooner to dispose of the lines, the Secretary of War be given authority and funds to continue operation of the barge lines on the Mississippi and Warrior rivers in accordance with good commercial practice. In favor, 1,402; opposed, 496.

X.—That waterways service, including through rail-and-water

routes and rates with suitable divisions of rates between the two types of carrier, be facilitated by public and private agencies wherever economically warranted and in the public interest. In favor, 1,742½; opposed, 194½.

XI.—That optional store-door collection and delivery with reasonable and separately itemized trucking charges in the published tariffs be established as rapidly as practicable by agreement between carriers and shippers, beginning at the centers of greatest congestion. In favor, 1,454; opposed, 478.

XII.—That wherever experience indicates that it will be in the public interest, regulatory bodies should facilitate the utilization of motor transport to replace uneconomical forms of rail service, to relieve yard and terminal congestion, and to extend existing steam and electric railway services. In favor, 1,608½; opposed, 322½.

XIII.—That the rates and services of motor common carriers, both freight and passenger, should be subject to regulation by the state and federal commissions which have jurisdiction over the operation of other common carriers, having particularly in view insuring to the public adequate, economical and continuous service. In favor, 1,765½; opposed, 200½.

XIV.—That in addition to bearing an equitable share of the general tax burden, the road users should pay the entire cost of maintenance of improved highways through special taxes levied against them, such special taxes being applied exclusively to that purpose. In favor, 1,283½; opposed, 436½.

### Howell-Barkley Bill Opposed

Based on the result of the transportation referendum and acting on the recommendation of the Transportation section of the chamber, of which Carl R. Gray, president of the Union Pacific, is chairman, the convention passed a resolution opposing any changes in the Transportation Act at this time that would constitute a departure from the principles on which it was founded and deploring in particular efforts to abrogate the labor provisions of the act through the so-called "Howell-Barkley" bill. The resolution is as follows:

"The important principles of the Transportation Act of 1920 should be continued without change until there has been further experience. This is the declaration of the Chamber in a referendum which closed only two days ago. The vote was so overwhelming that it leaves no room for doubt respecting the position of business organizations.

"The labor provisions of the Transportation Act contain important principles, for the continuation of which the Chamber has so emphatically declared. Abrogation of these provisions and violation of their principles is proposed by a bill which is now pending before the House of Representatives, and which is known as the Howell-Barkley bill. This bill would eliminate representation of the public as a party in interest in the determination of controversies between railroads and their employees, threatening interruption of traffic; would do away with the requirement for public investigation of such controversies; would tend to force all railroad employees, regardless of their individual wishes, into particular labor organizations and establish closed-shop conditions on railroads by law; would greatly increase the expense to the public, and would offer no new or effective guarantee to the public against interruption of railroad service by strikes."

### Advocate Postponement of

#### Effective Date of Section 28

Another resolution resulting from the deliberations of the chamber and which is of vital interest to the railroads concerns section 28 of the Merchant Marine Act of 1920. "We strongly advocate the indefinite postponement by congress of the effective date of the application of section 28 of the Merchant Marine Act of 1920. The announcement of the intention to make this provision immediately effective has created grave problems which are disturbing and hazardous to American producing, manufacturing and commercial interests."

This subject was discussed in the course of the convention

in a paper by T. C. Powell, vice-president of the Erie, New York, which is given in abstract below. Other papers of specific interest to the railway field included one on the co-operation of shippers and carriers, comprising an outline of the work of the regional advisory boards by Dr. H. G. Taylor, president of the National Association of Railway and Utility Commissioners, Lincoln, Neb., and another on the recent developments in highway transport by George M. Graham, president of the Chandler Motor Car Company, Cleveland, Ohio. These papers are also presented in abstract. At the conclusion of the convention Mr. Gray was re-elected chairman of the Transportation and Communication section.

### Improved Co-operative Relations

#### Between Shippers and Carriers

Dr. H. G. Taylor, president of the National Association of Railway and Utility Commissioners, Lincoln, Neb., opened his comments with a convincing demonstration of the importance of the railroads to the welfare of the country and briefly sketched the history of their development, dividing this into three phases, the period of construction, during which the people of the country accorded enthusiastic assistance to the pioneer builders in covering this country with a network of railroads; second, the period of exploitation, during which some of those who had gained control of railway properties exploited them to their own ends and to the disadvantage of the public, and, third, the period of regulation, which came as the result of efforts to correct the abuses of the period of exploitation.

"Undoubtedly," said Dr. Taylor, "the clamor for punitive and regulatory legislation has gone too far. The initiative of railroad executives has been blanketed. The fine constructive efforts of the old days have been thwarted and discouraged. Not only has the projection of new lines been almost completely stopped but the development of modern facilities has been retarded. We are face to face with the problem as to how that initiative, so characteristic of American genius, can be given free play, without the attendant abuses that come from its unlicensed exercise. This suggests the necessity for creating and maintaining a fine balance between the desired initiative and adequate and satisfactory public service. It is gradually dawning upon the public and the railroad executives that there must be a more whole-hearted and effective co-operation. We have sounded the depths of opposite extremes and found them unsatisfactory.

"To continue the hostile attitude between the public and the transportation systems and expect a happy and prosperous nation is as foolish as to expect a happy family to exist where there is hatred between its members. The era of co-operation is at hand. May we not hope that it is to furnish the fourth phase of railroad development in this country!

"Sensing these things, Donald D. Conn, manager of the public relations section of the American Railway Association, conceived the idea of establishing boards of arbitration between the shippers and the railroads and he has been engaged for the past year in setting up so-called shippers' regional advisory boards. There is nothing complicated or intricate about their organization. The prime purpose is to bring shipper and railroad men together.

"Thus far the effort has been signally successful. Indeed, the achievement has been little short of amazing. Within a period of a year the warlike attitude of both parties has been transformed. Where the boards have had time to function, hostilities have ceased and the parties are dealing with each other in good temper. The success of the plan has exceeded the expectations of its sponsors. The harmony and good feeling generated has been a remarkable demonstration of the fact that friction and conflict ceases when men with a common purpose meet about a table to discuss common problems. Much of skepticism and prejudice has had to be

overcome. Shippers with long standing grievances against the railroads were somewhat slow in the beginning to accept this movement as sincere. In the frank interchange of information and opinions in the meetings of the boards, however, their suspicions have been disarmed and in most instances they have become enthusiastic supporters of the plan. Many railroad men have been reluctant to endorse the effort. Some saw in it a possible interference with their own prerogatives. They have become converted into enthusiastic supporters of the idea. The generation of a spirit of harmony and whole-hearted co-operation has been at once the inspiring and the heartening feature of these meetings.

"Through the organization of the regional advisory boards the shipper was given a medium through which he might work directly with the railroads. And it is to his everlasting credit that he availed himself of the opportunity. He heartily joined in the effort to load the cars to capacity, to load and unload them promptly, to route in order to facilitate prompt movement, and in many other ways to assist in the great effort to make the transportation machine function to 100 per cent of its capacity. The outstanding accomplishment of 1923 is an unmistakable indication of the value of co-operation. It has pointed the way to still greater achievements in the future. Fortunately the agencies by which this co-operation can be fostered and developed already exist in the regional boards. Not only have they justified their organization from the standpoint of practical operation, but they hold a promise of much larger service in other directions.

"As the regional boards continue to function and mutual confidence between the parties is well established, other and broader studies of economic problems may reasonably be expected. The essential thing has been demonstrated. There is no inherent conflict of interest between shippers and the railroads. Their problems are common. Friction and hostility have no place in their relations. Informal negotiation eliminates petty selfishness and prejudice, and generates a feeling of good will."

### Inland Rail Rates in Relation to Ocean Transportation

By T. C. Powell

Vice-President, Erie, New York

Several years ago I had the pleasure of hearing Senator Jones of Washington make an appeal for the support of the business men of the country for the passage of a bill granting a definite ship subsidy and as it is generally understood that Section 28, as it now reads in the Merchant Marine Act of 1920, was introduced by Senator Jones, I assume his purpose was to establish through that section what amounts to a subsidy, through differential rates and regulations.

If you will analyze Section 28, however, you will find it is based upon the theory that in the course of time and without any other help than through the Shipping Board and the United States Treasury, there will be created a complete service from all the ports of the United States, to all or nearly all of the foreign ports of the world—I use the expression "foreign ports" advisedly, because the navigation laws already give a monopoly to American-documented vessels between the several ports of the United States and its possessions, except the Philippines.

Not only does Section 28 contemplate a service fairly complete, but read with Sections 7 and 8 it is clear the purpose was to establish permanent, regular, certain and adequate transportation from these several United States ports. If this was *not* the intention of Section 28, then it seems to me to be contradictory.

Now the defect in the Merchant Marine Act of 1920, taken as a whole, it not with respect to the *intention* of Congress,



but to the hastily conceived, and inadequately expressed, methods provided for in Section 28. The very controversy now reported in the papers to exist between the Shipping Board and the Emergency Fleet Corporation, is a disturbing element in the minds of the business men of the United States, and unquestionably raises a doubt as to whether the service is adequate, whether it is certain, whether it is permanent and whether it is regular. There is in fact no publication, except the daily press, which conveys complete information as to the ports now served by American-documented vessels, either as to the American ports or as to the foreign ports.

In the face of this uncertainty surrounding the operation and even the existence of a sufficient number of American-documented vessels to handle the foreign traffic of the United States, both import and export, is it any wonder that there should arise a universal protest against the certificate of the Shipping Board in which it requested the Interstate Commerce Commission to restrict the application of anything less than domestic rates and regulations, to American-documented vessels, with the important exception of grain and with the exception of certain foreign ports not specified in the certificate?

I think it was the purpose of Congress to vest in the Shipping Board a very large amount of discretion. All the way through the Merchant Marine Act of 1920 you will find such a thought expressed. I believe, therefore, that the discretion vested in the Shipping Board, justifies the board, within the limitation set by the Constitution, in developing American shipping—not by devoting a large part of it to the ports already well supplied with shipping facilities, but by undertaking a consistent development of the smaller ports of the country, and doing so in such a way as to develop definitely, if not finally, whether or not there can be an arbitrary distribution of the export traffic without a corresponding attraction for the import traffic.

The business men of this country can depend upon the railroads to do their part, but it is absurd and demoralizing to secure from the railroads the adjustment of export and import rates and then to nullify these efforts by trying to enforce Section 28, as it reads standing by itself, instead of enforcing the entire Merchant Marine Act, in all its bearings and with all the purpose and sentiment in favor of a business-like development, as Congress undoubtedly contemplated.

## The Relation of the Motor Vehicle to the Railroads

By George M. Graham

President, Chandler Motor Car Company, Cleveland, Ohio

Nineteen twenty-three saw the automobile industry make its greatest strides. Every development confirmed the expanding importance of motor vehicles in transportation. Although for the first time production exceeded four million cars and trucks, with a wholesale value of two and one-half billion dollars, it was not alone volume that made the year notable. Even these astounding figures are minor in importance compared to the increasing acceptance of cars and trucks as transportation factors. But above all, the vital thing that happened to our industry in 1923 was its improved relationship to its older and bigger brothers in transportation—the steam and electric railroads.

Upon our steam railway facilities has been built up, in large measure, the material prosperity of the nation. The best service for the motor vehicle is to make the railroad system more efficient and more profitable. For the gain in this direction, the public is largely indebted to the United States Chamber of Commerce. It was at the instance of our president, Mr. Barnes, that a conference of railway, auto-

mobile and waterways officials was called in New York, which resulted in the first great national analysis of transportation problems.

We now have a scientific system which allots to each transportation medium that function which it can most effectively perform. We can now forecast the eventual elimination of the motor vehicle as a competitor of the railroads. We welcome this. The logic of the findings permits no other outcome.

Actually, we have never regarded the motor vehicle as a serious competitor for the railroads within the proper field of the latter. Bulk and distance haulage is exclusively a steam railroad function. The service to be rendered by the motor vehicle is subsidiary and co-operative. We would much rather have the railroad for a customer than a competitor.

There are three main types of service which the motor truck is now rendering to the railroad: First—The use of motor trucks for short haul, less than carload lots, a type of service which has not proved profitable when discharged by steam railroads. Second—The adoption of motor trucks as a means of establishing terminals outside of congested districts. Third—Store-door collection and delivery in terminal areas.

In 1922 not one mile of motor truck service had yet been installed to replace steam railroad service in the handling of less than carload freight from station to station. This gives especial significance to the activities now launched by the Pennsylvania and the New York Central. But it is not alone by the use of trucks over the highways that railroads are now impressing into service the internal combustion motor. There is a steady tendency toward the use of gasoline motor cars operating on rails. While only 40 railroads were listed last year as using such a service, a recent compilation by the American Short Line Railway Association shows that 170 motor cars are now in use on 111 lines, of which 21 are trunk and the remainder short lines. These records show the approximate mileage now so covered to be 7,041, and 170 steam trains have been replaced. According to the association, the actual investment in serviceable motor cars, on rails, is probably not in excess of \$2,500,000. The steam train investment necessary to provide the same service would probably approximately \$8,000,000 to \$18,000,000.

Simultaneous with its recognition by steam railway companies, the motor vehicle is getting increasing consideration from electric railways. A total of 115 electric railway companies now operate 1,110 busses in feeder, auxiliary or co-ordinated service.

The United States Chamber of Commerce has expanded our opportunity. It has established a new basis of co-ordination between the four main transportation elements. We stand solidly on that platform, accept proudly the place it assigns to us, and will strive to achieve our future service to the public in full loyalty to its sound and far-sighted principles.

THE SUNSHINE SPECIAL of the Missouri Pacific, Texas & Pacific and the I.-G.-N. now runs through from St. Louis to El Paso in 41 hours, 15 minutes. The train arrives at El Paso at noon. The time is shortened about one hour, and to other Texas cities nearly one hour. The times are as follows: Leave St. Louis 6:45 p. m. (for example, Monday); leave Memphis 11:15 p. m. Monday; arrive Dallas 1:15 p. m. Tuesday; Fort Worth 2:10 p. m. Tuesday; El Paso 12 noon, Wednesday; Houston 5:30 p. m. Tuesday; Galveston 7:45 p. m. Tuesday; Austin 7 p. m. Tuesday; San Antonio 9:30 p. m. Tuesday. The eastbound train arriving at St. Louis at 11:30 p. m. on Thursday, leaves El Paso at 7 p. m. Tuesday; Fort Worth 4:10 p. m. Wednesday; Dallas 5:10 p. m., San Antonio 9:00 a. m., Austin 11:10 a. m., Galveston 10:30 a. m., and Houston 12:45 p. m., all on Wednesday.

## Argument on Pullman Surcharge

WASHINGTON, D. C.

**O**RAL ARGUMENTS were heard by the Interstate Commerce Commission on May 8 on the proposed report of Examiner Keeler recommending that the commission order the discontinuance of the Pullman surcharge. The railroads took many exceptions to the report and particularly to the recommendation that they be now deprived of the revenue accruing from the surcharge while the commission asks Congress to pass legislation to give it jurisdiction which might later result in a revision of their contracts with the Pullman Company. The representatives of the commercial travelers who have asked for the abolition of the surcharge disputed the statistics on which the railroad's case was based and insisted that the abolition of the surcharge would increase revenues by increasing traffic. The Pullman Company, represented by G. S. Fernald, general counsel, objected to the surcharge on the ground that it is "an additional charge to accrue to the railroads for service rendered to the passengers by this company and included in the charge for which this company's own tariffs provide," and also to "the method by which this company was made the collecting medium of surcharge revenue which was in effect added to its own rates, but accrue to the railroads."

Henry Wolf Bikle, of the Pennsylvania, on behalf of the Eastern roads, pointed out that the surcharge "comes with a pretty good pedigree" since it was instituted by the commission and later confirmed in a general case as well as in 13 state rate cases. It represents, he said, a proper principle which had been recognized long before the surcharge was adopted, and which the carriers had long tried to establish. It has been well established that a man cannot buy one railroad ticket and then have the use of an entire Pullman car by buying all the space in it. There is no attack in this case against the standard passenger fare or the regular Pullman fare but only against the charge for the relatively greater service rendered by the railroad to the Pullman passenger as compared with that rendered the coach passenger.

Replying to the contention that the railroads are relieved of capital investment for sleeping cars Mr. Bikle said that the interest on the investment in the cars at 6 per cent would figure out 1.4 cents per car mile, the maintenance cost of which they are relieved would be 3 cents per car mile, their contract revenue from the Pullman Company is less than 1 cent per car mile and their surcharge revenue 4 cents per car mile, making a total of 9.4 cents which is still less than enough to make up for the difference of 10 cents a car mile in revenue as compared with that received from day coach operation.

In reply to a question by Commissioner Campbell as to whether the railroads have made improvident contracts with the Pullman Company, Mr. Bikle said that there was no evidence in the case on that point beyond the fact that the contracts on different roads entered into at different times vary, and that the finding proposed by the examiner on that point is totally unjustified. If the time has come for any reduction in rates, Mr. Bikle said, the reduction should be made in the general charge rather than in special charges for special service, and the Pullman traffic has been increasing since the war peak much faster than passenger business generally. Referring to the testimony of the principal complaint that the taking off of the war tax on passenger travel had had no effect on travel Mr. Bikle said that the surcharge amounts to less than 10 per cent of the total charge paid by a passenger. When Mr. Bikle referred to the fact that the railroads generally are still earning less than a fair return Commissioner Potter said he understood that "the railroads collectively have decided that they have about \$33,000,000 of surplus revenues to give to labor."

Henry Thurtell, of the Southern, speaking for the southern

carriers, said that he travels as extensively as almost anyone and that he has observed no great public dissatisfaction because of the surcharge, and that the way the necessary revenue is now collected is as satisfactory as could be devised with reference to public convenience. He pointed out that many of the railroads in the South do not receive any contract revenue from Pullman car operation and that the fact that the greatest part of the surcharge revenue goes to roads also receiving the greatest contract revenue simply means that those roads are handling the most passengers. If the effect of abolishing the surcharge were to increase Pullman travel, he said, it would result in a net loss to the railroads because it would reduce the number of passengers they would handle in coaches at less expense. When Commissioner Potter asked if the service rendered by the railroad in addition to that rendered by the Pullman Company had not been taken into consideration in fixing the Pullman charge Mr. Thurtell replied that he did not know when it had ever been considered.

James L. Coleman, of the Atchison, Topeka & Santa Fe, speaking for the western railroads, said that to abolish the surcharge would be to transfer a burden from the prosperous industries and wealthy tourists to others who cannot afford any additional burdens. "The complainants admit the greater value of the service," said Mr. Coleman, speaking particularly of the National Council of Traveling Salesmen's Association. "But they seek to put the cost of it on the day coach passenger, or on the farmer, and other shippers. Since the beginning of time the lovers of luxury have always sought to put the burden upon the poor. These traveling men represent prosperous industries. They sell jewelry, corsets, shoes, wearing apparel, carpets and upholstery. These industries are making fortunes, while others, such as the farmers, are losing theirs."

"One of their witnesses rides in a parlor car because people in the day coaches eat bananas and peanuts and chew tobacco and are not personally agreeable to him. In that day coach which he left because the passengers ate bananas and peanuts (for the poor must eat), there may have been some farmers; there may have been some who served their country in France; there may have been widows of some one who died with their faces toward the Rhine; and if the rich succeed in their time-worn habit of making the poor pay their bills, there will come from the day coach and the farm a 'rising tide of public antagonism' as one of their witnesses suggested, and if it is in 'the direction of radicalism' it will reach those who have imposed upon them long before it reaches its goal of radicalism; just as in the French revolution they reached the king before they got through with the business in hand."

Before commenting upon the testimony of the witness for the traveling salesmen, Mr. Coleman called attention to the fact that in 1922 the western railroads made only 86/100 of 1 per cent on their passenger business. He said that if they had been deprived of the surcharge in that year they would have made only 26/100 of 1 per cent.

Instead of Pullman travel having decreased since the origin of the surcharge, he said, the testimony showed such travel had increased.

S. Blumberg, for the National Council of Traveling Salesmen's Associations, said that the railroads had voluntarily accepted for years a condition in which they received no revenue from the Pullman Company but paid it mileage, but by revision of contracts they have gradually brought about an increase in contract revenue until they are now participating in the Pullman earnings to the extent of about \$9,000,000 a year. If their contracts are improvident they are not justified in recouping themselves by a surcharge. He insisted that the surcharge was a war-time measure originally intended to curtail travel and never publicly advocated by the railroads and that it has deprived the carriers of revenue by curtailing travel. When the passenger has paid his Pull-



man fare and his railroad fare, he contended, he has paid for everything and if the Pullman charge is not high enough that fact should be determined in an entirely separate proceeding.

The following paragraph has been substituted for the paragraph commencing on sheet 10 and ending on sheet 11 of the proposed report, which was abstracted in last week's issue:

There is set forth as an appendix hereto a statement showing for class I railroads surcharge collections and rate of return on investment for 1923. The rate of return is computed on basis of the 1922 investment and 1923 net railway operating income. Of the \$16,035,033 surcharge collected in the eastern district \$13,762,441 accrued to the New York Central, Pennsylvania, New Haven and Baltimore & Ohio system lines. Of these all but the Baltimore & Ohio received heavy payments from the Pullman Company under their contracts, the average being approximately \$2,500 per car. Of the remaining \$2,370,462 the Delaware & Hudson, Lehigh Valley and Erie system lines with contract payments of \$3,148.95, \$1,122.41 and \$1,006.15 per car respectively, received \$466,828, leaving less than \$2,000,000 received by roads other than the Baltimore & Ohio which had no contract payments or payments of less than \$1,000 per car. The situation on the Baltimore & Ohio, which is something of an enigma, has already been commented on. In the western district 11 railroads or systems receiving from the Pull-

man company contract payments averaging \$3,274.17 per car, received \$11,797,215 of the \$15,695,403 surcharge collected. Eleven other railroads or systems receiving contract payments ranging from \$97.38 to \$1,028.56 per car received \$1,999,425 of the remainder of \$3,898,188. Furthermore of the latter amount the Chicago, Milwaukee & St. Paul, which operates its own cars, and therefore received all the revenue from the sale of parlor and sleeping car space, collected \$761,866. In the southern district 10 railroads or systems with average contract payments from the Pullman company of \$2,433.88 per car, received \$3,010,098 of the \$5,760,463 surcharge collected in that district, and five other railroads with contract payments ranging from \$478.21 to \$917.13 per car collected \$2,081,693 of the remainder of \$2,750,365. From the above it will be seen that the greater part of the surcharge goes to railroads which receive substantial payments from the Pullman Company under their contracts.

The above correction is necessitated by reason of the fact that the statistics shown on sheet 7 of the proposed report covering contract revenue payments, etc., include many subsidiary roads with their parent roads, whereas the figures shown in the paragraph of the proposed report for which the above is to be substituted, with few exceptions, include only the parent roads. The only material changes are in the figures for the western district.

## 42 Roads Object to Train Control Order

### Maintain That Devices Are Still Experimental—Other Expenditures More Productive

WASHINGTON, D. C.

**A**FTER five and one-half days of testimony on behalf of the 42 additional roads involved in the Interstate Commerce Commission's second train control order that are asking its annulment, the commission on May 14 began hearing the testimony of representatives of train control companies and inventors of train control apparatus in support of the order, with the intention of devoting a day and a half to this side of the case. The first day of the hearing, which began on May 7, was reported in last week's issue. After an interval of one day the general presentation on behalf of the railroads was continued before the commission on May 9 and 10, and on May 12 and 13 statements were presented by representatives of most of the individual roads before Examiner Mullen and E. H. De Groot, assistant director of the commission's Bureau of Service, who has been assigned to a general supervision of train control work within the commission's organization. Some additional testimony of a general nature was presented at the Wednesday morning session before the commission and was to be continued at an evening session before the examiner, while the commission was to hear the testimony of the train control representatives, who had also been allowed to cross-examine the railroad witnesses.

Most of the general witnesses on behalf of the railroads were representatives of roads included in the 49 roads named in the commission's first order, who had been denied a rehearing at the time the commission allowed a hearing to the additional roads named in the second order. Chairman Hall commented on the similarity of some of their testimony to that which might have been presented if their petition had been granted, but it was explained that the 42 roads that had never had a hearing were offering them as the best available witnesses of what they might expect.

In general the general testimony as well as that of the individual railroads was to the effect that train control devices are still in an experimental or at least a development stage, that until they are perfected they are likely to introduce new elements of danger, that most of the devices tried now are likely to be scrapped in a short time in the process

of the survival of the fittest and in order to bring about interchangeability between railroads, and that to require additional installations before the results of the installations on the first 49 roads have made greater progress would cause a more or less useless duplication of expense. The railroad witnesses also pointed out that the expenditure required would be productive of greater results in the way of safety or operating economy if used in other ways. There was rather general criticism of the ramp type of train control which has been rather extensively tested in service on several roads and many of the witnesses expressed a marked preference to the continuous induction type, even at a greater cost while declaring that it still requires further development. There was much discussion of the cost of train control and many of the witnesses gave figures as to their estimates of the cost, which varied considerably, some of them derived from actual bids and some from information furnished by other railroads.

The testimony offered at the hearing was very contradictory and the controversial spirit displayed at one time extended to a physical altercation between a railroad attorney and a train control man just outside the room in which the hearings were held.

W. R. Cole, president of the Nashville, Chattanooga & St. Louis, said that as a mechanical device and as far as installation on a large scale and subject to varying conditions is concerned, train control is still in the experimental stage and that the effect of the commission's orders would cause the expenditure of enormous sums without any assurance of satisfactory results. The railroads are not yet earning a fair return and the commission's orders would give preference to expenditures for this purpose, yet the commission is not willing to take the responsibility of selecting the device to be used. It is difficult to believe, he said, that Congress intended the commission to make any sweeping order in the present stage of development. He hoped the commission would give consideration to the proposal for regional tests. There is substantial agreement among railroad executives that the state of the art does not warrant such a sweeping

order and he felt that such a composite view should not be lightly disregarded.

#### Experience of the New Haven and the D., L. & W.

C. L. Bardo, general manager of the New York, New Haven & Hartford, after outlining the experience of that road in trying out various automatic train control devices over a period of years, said that until 1916 the New Haven had had an unenviable record for passenger train accidents but since that date it has so improved its practice that it has carried 735,000,000 passengers without loss of life in a train accident. "This is not a matter of mechanical perfection," he said, "safety is personal, and we are dealing with only a small element of the problem when we talk about the lives to be saved by these safety devices." Mr. Bardo then read statistics to show that train service employees average 59 years of actual service figured in days for each accident due to their negligence, and 1,700 years for each death as a result of the negligence of train service employees. From the standpoint of fundamental safety, he said, nothing is more serious than the problem of trespassing by pedestrians and highway grade crossing accidents.

Asked by Commissioner Aitchison if efforts should not be made to stop both classes of accidents, Mr. Bardo replied that "we ought to start with the big thing." There are 262,000 highway grade crossings in the United States and during the last three years 13,000 new ones have been made and only 734 eliminated. In endeavoring to comply with the commission's first order, Mr. Bardo said, the New Haven had decided that it could not afford to waste time with a device that did not have an engineering organization and a financial standing back of it and as to which there was no assurance that it would stay in business; the established signal companies are better equipped to develop a reliable device. It was also decided that the ramp type would not be satisfactory and the company is experimenting with the Union Switch & Signal Company's continuous control device because it believes that that offers the most hope of success.

The railroads ought to be allowed to proceed with great caution, Mr. Bardo said, so as to be sure they get the right thing. He also raised the question of braking distance, saying that at one place where operations have been conducted with entire safety for 10 years it was found that with an automatic stop it would be necessary to allow for a maximum safe braking distance which would lengthen the signal blocks and considerably reduce the capacity of the line. He was most decidedly of the opinion that the specification should contain a permissive feature. Asked what benefits he thought would result from the suggested regional tests, Mr. Bardo said that they might "satisfy the insatiable clamor of the public for the railroads to do something," but that as a practical matter he thought they would be of no value. The length and characteristics of the roads named in the first order are entirely sufficient to test out all available devices, Mr. Bardo said. Asked what had led to the decision that the ramp type is objectionable Mr. Bardo replied, the effect of sleet and snow and the difficulty of arranging clearances; and said that the ramp is liable to be disarranged by parts dragging from trains.

Mr. Bardo was followed by C. H. Morrison, signal engineer of the New Haven, who went into the technical details regarding the company's various experiments with train control. He said that the continuous control type seemed more suited to the New Haven conditions because any intermittent device requires that the braking distance be fixed for the trains which are most difficult to stop, which would be in a minority.

P. J. Langan, general air brake superintendent of the Delaware, Lackawanna & Western, said that the Lackawanna is working in an effort to develop the Finnigan intermittent

control device but because it was not possible to make sufficient progress with it in time to comply with the commission's order it was necessary to take up another type for that purpose. He had examined installations all over the country and had concluded that none of them would meet his conditions and so it had been decided to try both the continuous control and the intermittent control types. All the devices they had examined made an emergency application of the brakes, and as he considered this entirely out of the question from a safety standpoint efforts are being made to develop a device that will make an application as an engineman would. In a month or two he expected to be able to determine whether the device would meet the requirements; but the road is not yet in a position to equip an entire division. He believed decided improvements had been made in the last two or three years in train control devices but he would like to complete experiments under the first order before being required to go any further. "We hope we have got what we want," he said, "but we don't know yet."

A. H. McKeen, signal engineer of the Union Pacific system, described an installation just west of Omaha where three types have been tested with a locomotive equipped for all three—the continuous and intermittent induction types and the mechanical ramp type. Several changes had been found necessary and the tests have demonstrated that the ramp and intermittent types are unsuited to the weather and operating conditions; but it is believed that the continuous induction type can be developed with a fair degree of reliability after four or five years' development. The material originally installed is practically all obsolete now, Mr. McKeen said. Orders have been placed for the installations on the two engine districts required by the first order, one on the Union Pacific and one on the Oregon-Washington Railroad & Navigation Company, both of the continuous induction type. The cost is estimated at \$768,000; and a considerable portion of the material must of necessity be scrapped in the next two or three years. The Union Pacific, he said, is quite willing to co-operate with the commission but feels that the additional requirement of the second order will result in a useless waste of money. It would require three additional engine districts, making a total of 604 miles for the system and a cost of over \$2,000,000. He thought that the permissive feature should be allowed and that it would be physically impossible on his road to conduct traffic with a straight automatic stop. When Mr. McKeen expressed the opinion that the ramp type is based on a "fundamentally incorrect principle" Commissioner McChord asked him to explain why. He replied that the correct principle is that which deals only with a closed circuit, in which failure will cause the most restrictive indication, whereas in the intermittent type absence of contact gives a false clear indication.

#### The New York Central and the C. & O.

W. H. Elliott, signal engineer of the New York Central, described the experience of the New York Central in the past with train control devices and gave the estimated cost of complying with the commission's order based on bids received and contracts made for initial installations on each of the lines in the N. Y. C. system. The total figures were: Mohawk division, \$3,392,000; Boston & Albany, \$1,076,000; Michigan Central, \$660,000; Pittsburgh & Lake Erie, \$1,030,000; Cleveland, Cincinnati, Chicago & St. Louis, \$1,413,400; total for 501 miles of line, 1,351 miles of track and 839 locomotives, \$7,571,400. He also estimated the annual cost of maintenance at 10 per cent, depreciation 5 per cent, obsolescence 10 per cent, taxes 4 per cent and interest 6 per cent, or a total of 35 per cent. Commissioner McChord asked that the details of the figures be submitted.

When the hearing was resumed the next day E. H. Abadie, of the Standard Train Control Corporation, on behalf of the "Associated Train Control Corporations," offered a copy of



the New York Central specification as an exhibit. Chairman Hall ruled that that did not come under the head of cross-examination. C. C. Paulding, representing the New York Central, said that a copy of the specification and a summary of the bids had been furnished to the Interstate Commerce Commission.

Mr. Elliott took the position that train control is largely in the experimental stage and that while as to some devices it had advanced to the development stage, everything tried now will probably have to be scrapped later and he thought that the requirement of complete engine districts was unfortunate. The Sprague device, he said, is now 50 per cent different from what it was in February, 1923. Discussing braking conditions he said it will be necessary to expect a good many improper stops and that to forestall the operation of the device an engineer would have to apply the brakes much sooner than he now does. It had been decided that on long trains the brakes should be applied by a 15-lb. reduction of pressure and this would necessitate allowing a braking distance of 8,400 ft. This would delay traffic; but it will be necessary to put up with this rather than risk buckling of freight trains. With the engineer in control only 4,200 ft. is necessary. Mr. Elliott took the position that a ramp or intermittent contact device is now practically obsolete.

T. A. Hamilton, president of the International-Great Northern, requested that the commission relieve that road from the requirement of its second order, saying that it would first be necessary to install automatic block signals and that his estimates for the installation of the Union and National devices range from \$505,000 to \$747,000 with an annual maintenance cost of \$41,000 to \$60,000. The development of the territory traversed is such, Mr. Hamilton said, that large expenditures will be required during the next few years for increased facilities and much better use could be made of available money in other directions.

B. T. Anderson, signal engineer of the Chesapeake & Ohio, after outlining that company's eight years of experience with train control, which he said had not yet given it a satisfactory device, said that the actual costs were considerably in excess of the manufacturers' figures which were used in the commission's report of 1921, partly because of expenses, borne by the railroad, which were not included. Whereas the figures used by the commission were from \$901 to \$1,500 a mile, the first seven miles of simple automatic stop installed cost \$29,550 and 21 miles, including signals, cost \$86,247. Also the 40 miles from Charlottesville to Staunton, including signals, cost \$320,639 or \$8,216 per mile. For train control without signals the cost for the first 21 miles, he said, would be \$50,904 or \$2,424 per mile, and for the 40 miles, \$241,520 or \$6,038 per mile. His opinion was that a less amount would pay for the induction system but that an expenditure of \$2,000,000 to comply with the second order would not be warranted for a device so unreliable, as compared with block signals. The cost of maintenance for 61 miles, he said, is about \$45,000 a year, or about three times the figures used in the commission's report. During the eight years the C. & O. has had no accident in that territory that the automatic signals alone could not have prevented and the company doubts the wisdom of continuing to extend the ramp type when nearly all the other roads are considering the induction type, as its engines run over other roads. In reply to questions by Commissioner Potter he said he had not studied the Miller or the Regan installations sufficiently to reach a final conclusion; but he thought the C. & O. installation was "about as good." In reply to Commissioner Esch he said that the records show the device had operated satisfactorily during the heavy snow in January, 1922, and that only once in seven years had there been any trouble caused by something dragging from a train and striking the ramp. He also thought there had been less failures during the last few months than before.

### The Rock Island and the Erie

C. A. Morse, chief engineer of the Chicago, Rock Island & Pacific, was then called to testify regarding the operation of the Regan device. Mr. Hall stated that the Chicago & Eastern Illinois had been asked to send a witness but that it had declined. He said they had tried to get as witnesses all those who know most about train control, although they do not all agree. "We don't take the position that the matter is hopeless. \* \* \* We are anxious to go forward with any reasonable plan but we think that the development can go on with a less extensive installation than that required by the order."

Mr. Morse said that he did not qualify as a signal engineer and that he had been appointed chairman of the United States Railroad Administration train control committee because of the accident of the position he then occupied with the administration. When he returned to the Rock Island the Railroad Administration had authorized the installation of the Regan device for 40 miles of track at the expense of the Regan company. Later it was extended and the 165 miles of road from Blue Island to Rock Island was completed last November. The transportation, mechanical, signal and maintenance people, he said, see no reason why it should not be successful, although experience had developed some small difficulties; and it would probably be three or four years before it got down to a basis of ordinary maintenance. Asked whether it would be wise to make a further installation now Mr. Morse said that his idea was that the installation would probably develop a number of things to be changed and redesigned in small parts; and that he knew of so many places where, if he had the money, he could make improvements that would pay 50 to 100 per cent on the investment that he would hesitate to spend money for something that would add to maintenance cost. What the western roads need, he said, is to become able to pay a dividend on their common stock so they may be able to sell bonds at a reasonable figure to raise money for needed improvements that would reduce the cost of operation. If he had \$1,000,000 to spend, in the best interest of the public he would spend it for other things. In reply to questions by Commissioner Potter Mr. Morse said that there is no reason why the device should not work as well as the automatic signals but that the need for it had been developed in but a very few cases. During the worst sleet storm in 10 years this winter there had been no interference with the operation of the ramps. The cost had been \$240,000 and about \$12,000 more will be required to carry out certain suggestions made by the commission's engineers. He knew of no accident that had been prevented by the device so far. Asked regarding the desirability of further tests Mr. Morse caused a laugh by saying that further tests should be made on a road that has reached the "recapture stage."

Mr. Morse was cross-examined by George N. Brown and J. Beaumont, representing the Regan Safety Devices Company, in an effort to elicit more specific statements regarding the operation of the device. He said he had had nothing to do with approving its installation, that his general attitude toward train control had been as he had explained—that many other things are more needed—and that he was not in intimate touch with the details of its operation. He said it was in satisfactory operation every day with long trains.

W. L. Campbell, assistant to the operating vice-president of the Erie, was then called to testify that the Regan company had submitted a bid to the Erie which was on a higher basis than the cost on the Rock Island, but Mr. Brown, counsel for the Regan company, said the figure named was \$100,000 more than the actual bid. Mr. Campbell said that his company had asked bids for the installation of train control, including speed control, to be super-imposed upon the existing block signal system on 126 miles of double track

between Marion, Ohio, and Huntington, Ind., the specification showing just what was to be furnished by the railroad in each case. The bids received, he said, were as follows:

Company	Amount bid	Estimated additional cost to railroad	Total
Regan Safety Devices Co.....	\$358,612	\$169,694	\$528,306
Train Control Corporation of America.....	471,938	28,843	500,781
Pittsburgh Train Control Corp.....	421,100	27,925	449,025
Richards Train Control Corp.....	298,800	147,516	446,366
General Railway Signal Co.....	390,000	44,818	434,818
Union Switch & Signal Co.....	378,000	43,022	421,022
Miller Train Control Corp.....	170,527	218,733	389,261
National Safety Appliance Co.....	241,584	91,785	333,369
International Signal Co.....	.....	292,139	.....

In explanation of the last item Mr. Campbell said the International company had submitted a special price on engine equipment only and had asked that it be treated as confidential. Mr. Webb arose and said it was the same price that had been submitted to all roads named in the commission's order.

Mr. Campbell, when he resumed his testimony on May 14, said that bids on a similar basis had been obtained for the division between Meadville, Pa., and Salamanca, N. Y., 105.85 road miles, 188.5 track miles, 212 blocks and 77 locomotives. There are no automatic signals in this line except for a short stretch. The figures were as follows:

Company	Bid	Additional Cost to Railroad	Total
Regan .....	\$396,076	\$186,555	\$582,631
Richards .....	332,700	178,628	511,328
Train Control Corp.....	465,396	38,120	503,517
Miller .....	196,695	240,397	437,092
Pittsburgh .....	396,500	39,822	436,322
National (stop only).....	224,769	94,788	319,559
International .....	.....	297,252	297,252

The railroad had estimated from its own experience that the cost of installing signals alone on this section with its own forces would be \$568,887, which would make the total cost for most of the devices about \$10,000 a mile. In order to check these figures and also to get figures from companies that could instal both signals and train control, bids were received from the Union Switch & Signal Company, which bid \$869,500, while the additional cost to the railroad would be \$190,410, or a total of \$1,059,910; and also from the General Railway Signal Company, \$895,000, while the additional cost to the railroad would be \$191,157, or a total of \$1,086,157.

The Erie is now trying out the Webb and Clifford devices and believes that the Webb and Miller devices offer the best plain stop of the ramp type so far operated, but, Mr. Campbell said, they have not yet worked out the speed control feature. Also, the signal system has discarded the intermittent principle and he believed it would be a step backward to go to the intermittent type in train control. Since 1904, Mr. Campbell said, the Erie has not killed a passenger in a butting accident and only six passengers on its trains have been killed in any way in that time. He believed that permissive feature would be absolutely necessary to get trains over the road without congestion. In conclusion Mr. Campbell said, that, having made inspections and studies of the various devices he believed there is none now manufactured or installed on any road that would satisfactorily meet the operating requirements of the Erie and any of them would be likely to "add dangers to a record that is now pretty good." In reply to questions he said that the long record of the Miller control was made with a permissive feature which is not included in the commission's specifications, and that the Regan device on the Rock Island in his opinion is not as good as the Miller or the Webb. He believed the inductive or conductive continuous control type offers the best solution, although an intermittent type might be satisfactory for a road in sparsely settled territory.

Mr. Campbell was cross-examined by George N. Brown, representing the Regan company, who asked if that company had not bid \$214,000 for the Marion division instead of the figure mentioned. Mr. Campbell read from the proposal showing it had bid \$214,997 for materials, engineering and

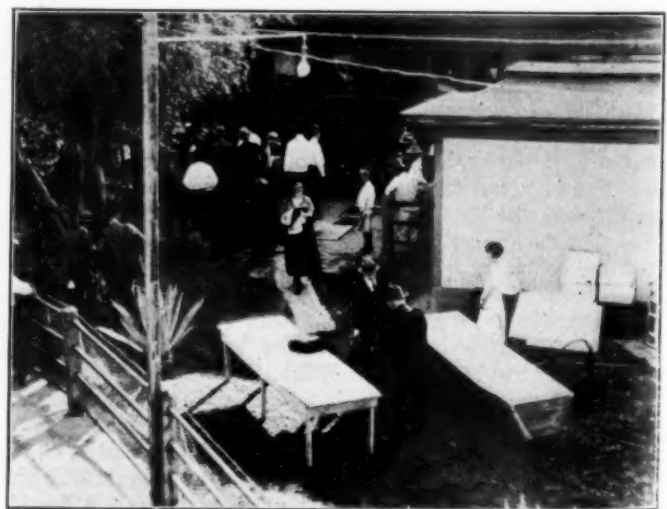
supervision of installation but that it had also added estimates totalling \$143,615 for the material to be furnished by the railroad and \$54,226 for labor, making a total of \$412,838, but that there had been no firm bid or offer to do the work for that figure. Mr. Beaumont insisted that the company had offered to do all the work for the price named and later the Regan company submitted a copy of its proposal as an exhibit.

C. W. Huntington, president of the Virginian, testified that information received from a neighboring road indicated that the train control installation required by the commission for its Norfolk division, including block signals, would cost at least \$2,500,000 or \$10,000 a mile and that the company would have difficulty in raising that sum for such a purpose unless safety demanded it. As no such demand is apparent, he said, there is no justification for it on a division which in its busiest month had an average of less than 19 train movements a day.

D. W. Richards, signal engineer of the Norfolk & Western, said that the estimated figure of \$10,000 a mile for his road included automatic block signals and a high tension line to be installed at the same time and that the cost for the Union Switch & Signal Company's continuous induction system would be about \$7,500 to \$8,000 per mile. He thought this type capable of the best development and that the ramp type is objectionable because "we don't want anything more hanging on the engine or alongside of the track." He said the road did not want train control but if it was going to have it, it wanted to get the most for its money rather than to pay less for an inferior device.

Examiner Curry offered as part of the record for this proceeding the testimony and exhibits taken at previous hearings. Fitzgerald Hall, of the Nashville, Chattanooga & St. Louis, for the committee of counsel representing the railroads, made a formal objection to this except for the parts which had been specified in a conference with Mr. Curry, because, he said, it included some hearsay and many statements which were not subject to cross-examination. Chairman Hall announced that in view of the protest the material would not be received but that another course would be taken to include parts of it.

The testimony on behalf of the train control companies was begun by the Regan company, which presented six witnesses, occupying the afternoon session on May 14. This will be reported in next week's issue in connection with the remaining testimony on the train control side of the case.



P. & A.

Disinfection of Railroad Passengers at Yuma, Arizona



# Narrow Margin Over Burlington Dividends

## Agricultural Depression and Cost of Repairing Flood Damage Make Net Lowest Since 1915

THE CHICAGO, BURLINGTON & QUINCY did not, in the year ended December 31, 1923, evidence the usual earning power that in the past has been its outstanding characteristic. Net after fixed charges for the year amounted to \$19,290,529; this compared with \$20,261,488 in 1922. It was the lowest net corporate income reported by the Burlington since the year ended June 30, 1915, in which year, with operating revenues equal to less than one-half those of 1923, and revenue ton-miles slightly over two-thirds, corporate net income totaled \$19,041,919. The Burlington pays 10 per cent on its outstanding stock, which dividends accrue to the Northern Pacific and Great Northern. The dividends in 1923 amounted to \$17,083,735; the income balance after dividends and an appropriation of \$289,410 for sinking funds was \$1,917,385.

Prior to 1921, in which year it issued a 54 per cent stock dividend, the dividend rate was 8 per cent on the smaller capitalization. The regular dividends at that rate totaled about \$8,867,000, and it was the good fortune of the property to earn them consistently nearly three times over. The best year that the Burlington ever reported was 1916; it earned in that year a balance after charges of \$32,994,726. Notwithstanding the fact that in that year it made appropriations from income totaling nearly \$20,000,000, the balance after dividends and appropriations was nearly \$5,000,000.

### Earned 76 Per Cent of Standard Return

Burlington net operating income, or net after equipment and joint facility rents, in 1923 totaled \$25,365,567, which

the small margin over dividends is hardly in keeping with former records. One does not have to seek far to find the reasons for the Burlington's difficulties, such as they may be. In 1923 it suffered severe damage from floods which destroyed extensive mileage on parts of its lines west of the Mississippi river. The result was to impede operation and to expand the maintenance of way expense accounts to which the larger share of the cost of the repair work was charged. Considering the severity of the floods, the wonder is that their effect was reflected no more than it was in the year's net. The Burlington suffered in 1923, in addition, from the agricultural depression ruling in a large portion of its territory. The Burlington is not included in the northwestern region, but it does, nevertheless, serve agricultural areas affected similarly to that traversed by the more strictly termed northwestern roads. Agricultural products constitute normally about one-fifth of the Burlington's total revenue tonnage; in 1923, the road carried 10 per cent less traffic in this group than in 1922. It is evident that it must have suffered greatly from the reduced buying power of the farm areas. The Burlington is one of the country's largest carriers of live stock. It is on farm products and live stock that the greatest reduction in rates has been made. The Burlington in 1923 carried its traffic at an average revenue per ton per mile of 0.996 cents, which was but 36½ per cent above the level at which it moved its traffic in 1913.

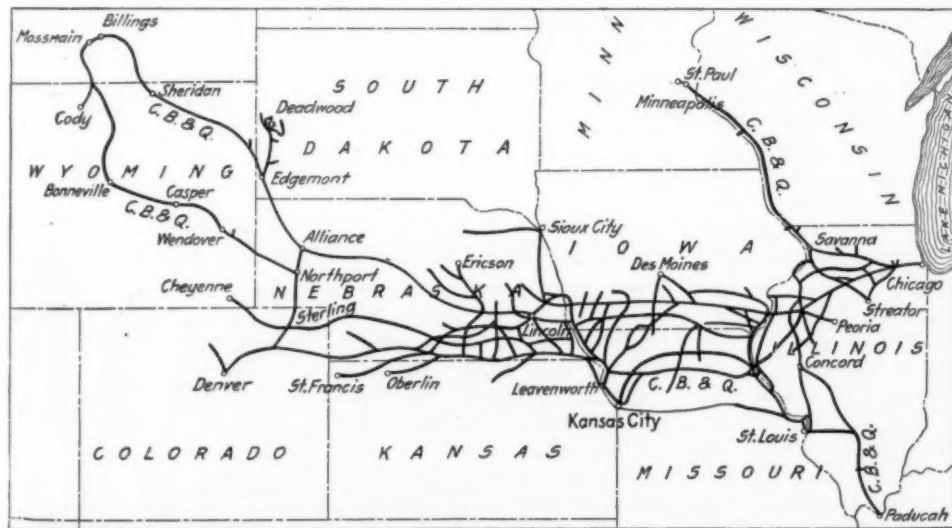
The Burlington carried in 1923, 11 per cent more revenue tons of freight than in 1922. There was an increase of 26 per cent in bituminous coal—coal tonnage in 1922 was reduced by the coal strike—and coal constituted 32 per cent of the total revenue tonnage. There was an increase of 13 per cent in manufactures. Revenue ton-miles for the year exceeded those of 1922 by 7.96 per cent. Revenue tons and revenue ton-miles alike for 1923 were less than in 1917, 1918, or 1920.

Operating revenues in 1923 totaled \$171,270,661, an increase of 3.85 per cent over 1922. Total operating expenses were \$134,290,379, an increase of 5.93 per cent. The operating ratio of 78.41 compared with 76.87 in 1922. Prior to the war the Burlington operating ratio averaged less than 70. In 1916 the ratio was only 59.74. The essential reason for the high ratio now as compared with the low ratio then is naturally the disproportionate increase in wages and cost of materials as compared with the

relative small increase in ton-mile earnings which existing rates have permitted.

### A Comparison of Ratios

The Burlington annual report for 1923 gives some interesting information in this connection. Thus it is shown that the payroll in 1913 was \$36,917,000; in 1917 it was \$49,180,000, but in 1923 it was \$82,017,000. It will be remembered that the traffic carried in 1923 was less than



The Chicago, Burlington & Quincy

compared with \$25,152,174 in 1922. In no year since the beginning of federal control has the Burlington earned the equivalent of its standard return based on the average annual net operating income of the three years ended June 30, 1917. The 1923 net operating income was equivalent to 76 per cent of the standard return.

There can be nothing particularly disconcerting in connection with a railway property sufficiently well off to earn a margin over 10 per cent dividends except that in this case

that moved in 1917. As compared with 1916 there was an increase in revenue per ton-mile of 40.7 per cent. On the other hand, there were increases in 1923, as compared with 1916, of 108.5 per cent in wages paid per hour to employees; of 92.3 per cent in taxes; of 102 per cent in price per ton of locomotive fuel and of about 75 per cent in prices of materials generally. To overcome the disparity between the increase in earnings and that in costs, the report adds, there have been improvement in methods of operation and economies resulting from capital expenditures for improved facilities, such as yards, engine terminals, modern machinery, heavier power and reduction in grades. "The results accomplished in this respect are evidenced by the fact that the number of gross tons moved one mile on the railroad per hour of labor was 242.60 in 1916, and 295.39 in 1923, an increase of 21.8 per cent."

The Burlington's increase in operating expenses in 1923, as compared with those of the year immediately preceding—5.93 per cent—was not great. It was practically all in the maintenance accounts. With the increase of 7.96 per cent in revenue ton-miles and of 2.69 per cent in passengers one-mile, there was an increase of but 0.83 per cent in transportation expenses. The transportation ratio of 37.01 was the lowest transportation ratio for any year since 1917. It

tenance of way in 1923 exceeded those for 1922 by only \$1,215,178, or about 5¼ per cent.

### Maintenance of Equipment

Maintenance of equipment expenses in 1923 exceeded those of 1922 by \$4,918,922, or about 9 per cent. This was partly due to making up deferred repairs resulting from the shopmen's strike of 1922, but more particularly to a continuance of a program of heavy freight car repairs. Approximately 6,000 steel coal cars acquired about twelve years ago were rebuilt in 1923, and it is expected that the same number will require similar repairs in the next two or three years. In all, 11,638 cars were given heavy repairs, an increase over 1922 of 25.54 per cent. General repairs were given 896 locomotives during 1923, an increase of 59.43 per cent. The annual report is authority for the statement that "The power and cars of the company at the end of the year were generally in better condition in consequence of these heavy expenditures than for many years previous."

The Burlington in 1923 expended for additions and betterments the sum of \$17,408,749, divided \$12,687,625 for road and \$4,711,949 for equipment. This was not as much as it spent in 1922, when the capital expenditures totaled \$19,371,342, of which \$11,000,000 was for equipment.

CHICAGO, BURLINGTON & QUINCY OPERATING RESULTS, 1914 TO 1923

Year ended June 30	Mileage	Revenue tons	Revenue ton-miles	Average haul	Revenue per ton mile, cents	Revenue train load	Revenue car load	Total operating revenues	Total operating expenses	Net operating revenue	Operating ratio	Net after charges
1914	9,264	32,388,800	8,612,630,000	266	0.729	479	19.08	\$93,687,141	\$63,224,853	\$30,462,288	67.49	\$18,807,202
1915	9,366	31,758,791	8,527,444,000	269	0.733	492	19.23	91,125,061	60,441,367	30,683,694	66.33	19,041,919
1916	9,369	36,640,658	10,087,484,000	275	0.710	558	20.20	102,358,893	61,713,161	40,645,732	60.29	29,846,270
Year ended Dec. 31												
1915	9,373	39,278,135	10,923,326,000	278	0.708	575	20.53	109,191,204	65,235,705	43,955,500	59.74	32,994,726
1917	9,373	45,364,552	13,143,186,000	290	0.662	629	23.37	122,342,707	78,632,344	43,710,363	64.27	29,406,032
1918	9,373	47,264,416	14,162,605,000	300	0.738	669	25.78	144,172,769	112,067,616	32,105,153	77.73	22,792,500
1919	9,372	40,235,427	11,952,721,000	297	0.895	621	22.60	154,011,438	120,492,962	33,518,476	78.24	23,542,471
1920	9,390	47,233,256	14,130,364,000	299	0.932	661	24.86	185,270,768	164,017,388	21,253,380	88.52	22,924,364
1921	9,364	36,116,089	10,554,788,000	292	1.163	591	23.54	168,712,268	128,216,290	40,495,978	76.00	25,609,973
1922	9,364	39,176,051	11,754,596,000	300	1.033	629	23.69	164,916,471	126,777,703	38,138,767	76.87	20,261,488
1923	9,406	43,483,603	12,690,384,000	292	0.996	612	22.88	171,270,661	134,290,379	36,980,282	78.41	19,290,529

is a tribute to Burlington operating efficiency that, with the difficulties that must have been offered to operations by the floods, transportation costs should have been kept so well in hand.

### Flood Damage

There were three successive destructive floods on the lines in Wyoming; the first on July 23 and 24, the second on September 27 and 28 and the third on October 9. The first damaged a considerable mileage of track and a number of bridges between Casper, Wyo., and Thermopolis and substantially destroyed about 20 miles of line between Bonneville and Lysite. The later floods interfered with the construction work and destroyed a considerable amount of new work before opportunity had been given to protect it. As a result all through service between Casper and Billings, Mont., was interrupted from July 23 to November 1. All through business was, however, kept on the Burlington rails, being moved over the line through Alliance and Sheridan. When the line between Bonneville and Lysite was rebuilt, it was relocated on higher ground at a greater distance from Bad Water Creek, and so placed as to eliminate eight of the former eleven crossings of the stream. The relocated line from Bonneville to Schoening, 8 miles, was opened to traffic on November 1, and the remaining 12 miles between the latter point and Lysite is expected to be ready shortly. The total cost of the project, including both charges to operating expenses and capital accounts, is estimated at \$2,422,504, of which \$1,087,892 had been spent up to the end of the year.

In spite of the extraordinary charges to maintenance of way resulting from the flood damage, the expenses for main-

In its annual report the Burlington this year sets forth in great detail the projects on which it is engaged. It gives details of the approximate cost, of the expected date of completion, and most important—an indication of the reasons for carrying on the work. This is an idea which other roads could afford to observe, for such practical information is of greatest interest to stockholders and other users of the annual reports.

### Program of Improvement

The Burlington's elaborate list for 1923 includes, among others, the following important items:

Chicago Union Station, being built by the Chicago Union Station Company and expected to be ready for service by January 1, 1925.

Chicago inbound freight house, completed on April 9, 1923, at a total capital cost of \$1,228,841, of which \$294,937 was spent in 1923.

Chicago, new outbound freight house, work well advanced. Total estimated cost \$2,547,893, of which \$969,383 was expended in 1923.

Chicago, elevation of Canal street from Harrison street to Polk street. Total estimated cost \$714,808, of which \$640,235 was expended in 1923.

Aurora, Ill., track elevation; begun in 1915 and now substantially completed.

Eola, Ill., improvements including scrap storage and reclamation plant completed on October 1, 1923, total cost \$262,181; five-stall engine house put in service September 1, total capital cost \$33,474, and new connection with Elgin, Joliet & Eastern, \$61,006.

Denver, locomotive repair shops, completed and put in



service on December 1, 1923, at total capital cost of \$2,348,906, of which \$2,009,834 was expended in 1923.

Low grade line, Frederick, Ill., to Vermont, 18 miles in length, with maximum grade of 0.25 per cent to handle north-bound tonnage trains. This is expected to result in material economy of operation because of the elimination of pusher service and to increase traffic capacity. It is hoped to have the work completed in time for the heavy fall coal movement of 1924. The total cost of the project is estimated at \$2,470,760. There was charged to capital account on this project in 1923, \$719,799.

New line, Chalco, Nebr., to Yutan, 12 miles, placed in service in May. Begun in 1915 and total capital cost was \$729,507. The purpose of the project was to provide improved service between Omaha, Nebraska, and Sioux City, Iowa.

Other projects noted are the line changes in Wyoming, already described; realignment of track at Weston, Mo., total cost, \$205,593; 900,000,000 gal. reservoir at Galesburg, Ill., completed on June 15, 1923, at total cost of \$425,830; replacement of temporary portions of Platte river bridge at Oreadpolis, Nebr., total capital charge \$326,753; double track Reno, Ill., to Ayers, 5 miles, and Woodlawn to Waltonville, 8 miles, total capital cost \$389,754; bridge replacements, \$418,217 charged to capital account in 1923; automatic block signals, 234 miles, completed in 1923, and 62 more to be completed in 1924, total capital charges in 1923, \$516,896; heavier rail \$308,846, etc.

### Equipment

During the year the Burlington received 60 new Mikado locomotives and 297 freight cars. A program was undertaken of adding superheaters to 25 locomotives, and feed water heaters to 20, which work was partly completed during the year. On December 31, 1923, the road owned 1,978 locomotives with a total tractive effort of 71,389,600 lb. and an average tractive effort of 36,092 lb. At the end of 1917, the road's total tractive effort was 57,733,360 lb. averaging 32,362 lb. per locomotive. Of the 1,978 locomotives owned at the end of 1923, 923 were equipped with superheaters and 259 with mechanical stokers. The number of freight cars owned at the end of the year totaled 69,756 with a total carrying capacity of 2,943,011 tons, or an average of 42.19 tons to the car.

## Freight Car Loading

WASHINGTON, D. C.

REVENUE FREIGHT CAR LOADING again showed an increase over the figures for the previous week during the week ended May 3, when the total was 914,040 cars, although this was a decrease of 47,577 cars as compared with the corresponding week of last year. As compared with 1922 it was an increase of 166,840 cars. The cumulative total for this year to date is now slightly below that for last year, although for some time it has been above. As compared with last year there were increases during the week of May 3 in the loading of grain and grain products, forest products, ore and merchandise and in the Northwestern and Southwestern districts. Coal loading, however, was 48,317 cars below the figure for last year and miscellaneous loading was 20,362 cars below. The summary as compiled by the Car Service Division of the American Railway Association follows:

REVENUE FREIGHT CAR LOADING WEEK ENDED MAY 3, 1924

Districts	1924	1923	1922
Eastern	221,754	242,945	179,605
Allegheny	187,446	213,921	142,263
Poconantas	36,981	38,324	38,012
Southern	132,288	139,236	122,646
Northwestern	140,482	133,353	106,608
Central Western	134,124	137,413	110,073
Southwestern	60,965	56,425	47,993
Total Western districts	335,571	327,191	264,674
Commodities			
Grain and grain products	43,591	34,163	39,919
Livestock	32,247	32,811	29,944
Coal	127,165	175,482	75,125
Coke	10,021	15,097	8,134
Forest products	75,289	72,177	56,845
Ore	43,239	37,943	11,460
Misc. L.C.L.	249,863	240,957	242,610
Miscellaneous	332,625	352,987	283,163
Total	914,040	961,617	747,200
April 26	878,892	962,578	751,111
April 19	876,923	958,042	706,137
April 12	881,299	947,271	706,155
April 5	862,096	896,375	706,013
Cumulative total January 1 to date	16,000,524	16,042,623	13,511,753

### Car Loading in Canada

Revenue car loadings in Canada for the week ended May 3 aggregated 54,986, an increase over the previous week of 1,583 cars. Grain, lumber, ore and miscellaneous showed increases of 699 cars, 422 cars, 302 cars and 1,408 cars respectively. Pulpwood and coal have been showing seasonal declines and grain with the opening of navigation should continue to show increases, especially in the western division. Compared with the same week last year the increase was 3,404 cars, or 6.6 per cent and cumulative totals to date show an increase for 1924 over 1923 of 78,991 cars, or 9.1 per cent. Car loadings, by commodities, for the three weeks follow:

For the week ended

Commodity	April 19 Cars	1924 April 26 Cars	May 3 Cars
Grain and grain products	7,023	7,325	8,013
Live stock	1,961	2,316	2,181
Coal	5,288	5,472	5,113
Coke	110	243	267
Lumber	3,792	3,481	3,903
Pulpwood	2,152	2,125	1,825
Pulp and paper	1,885	1,819	1,824
Other forest products	2,678	2,795	2,330
Ore	1,200	1,130	1,432
Merchandise L.C.L.	13,888	15,531	15,524
Miscellaneous	10,567	11,166	12,574
Total cars loaded	50,544	53,403	54,986
Total cars received from connections	34,173	32,280	32,473
Total cars loaded for corresponding week,			
1923	52,950	52,195	51,582
Cumulative loading to date—1924			945,381
1923			866,390

The freight car surplus continued to increase during the last week in April to a total of 329,489 cars, including 193,061 coal cars and 101,648 box cars. There were also 10,332 surplus refrigerator cars. The Canadian roads for the same period had 17,050 surplus cars, including 12,950 box cars and 400 coal cars.



CHICAGO, BURLINGTON & QUINCY RAILROAD CO.

# CLEAN FLUES

# SAVE FUEL

# WORK TROUBLE

Example of 28-in. by 22-in. Placards to Be Posted Monthly in Enginehouses and Enginemen's Washrooms by the Chicago, Burlington & Quincy for the Purpose of Causing Discussion and Creating Interest in Fuel Economy

# The Paying Weight in Locomotive Boilers

## Firebox Heating Surface About Twice as Effective as Tubes and Flues Per Pound of Material

By C. A. Seley

Consulting Engineer, Locomotive Firebox Company, Chicago

**W**EIGHT IS A MATTER of prime consideration in locomotive design. It is arrived at tentatively, having in mind the possible weight on drivers as limited by their distribution on bridge spans and rail, together with weights on truck and trailer wheels as necessitated by the type and service proposed, whether for passenger, freight or switching duty. Then, from the adhesive weight may be worked out the tractive force, driving wheel and cylinder sizes and the data on which to calculate boiler dimensions.

The weight of the boiler is distributed to all wheels and contributes most to adhesion. The weight at the front end is relatively light, and the forward trucks carry also the

breadth will be as nearly alike as possible. This must all be done without extending the wheel base too much to prevent the engine from curving. Now (in 1900) there is not much difficulty in doing all these things, except supplying a firebox of the size and proportions designated.

"It may be that those who now condemn what might not inappropriately be called (because they are so heavy behind) the 'Kangaroo' species of locomotives, will have occasion later on to modify their opinions of them. That plan is the only one which permits of having a firebox of sufficient length, depth and breadth for engines of the sizes and weights, which are now required. The firebox is the source of power, and if it is too small, nothing else will compensate for the deficiency. It is, therefore, believed that the future development of the locomotive will embody the 'Kangaroo' feature; that is, that the firebox will be behind the driving wheels and will be made of a width considerably greater than the space between them and of ample depth."

The trailer truck came early into use with the fireboxes as predicted by Mr. Forney and are now a common feature of design in most road locomotives.

### Weight of Heating and Non-Heating Boiler Surfaces

The weight of the boiler may be sub-divided for the purpose of this discussion. First and foremost is that of the heating surfaces, comprising the firebox proper, which may be extended by a combustion chamber, and may contain arch tubes and syphons, all of which participate in the direct effects of combustion by way of radiant and conducted heat. The tubes and flues are also heating surfaces, although of lesser value in evaporation.

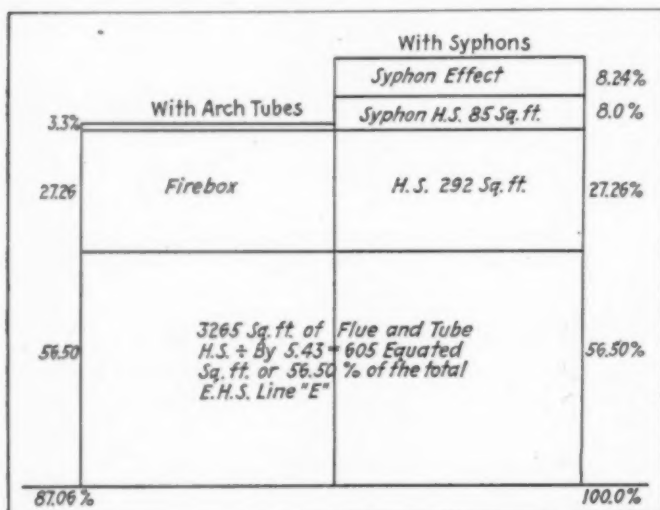
The second item is that of the shell, wrapper and back head, which form an outer container. To these belong the grates, mud ring, dome, front end and appliances, the staying, braces and anchorages. The third item is that of the boiler water. The second and third items are not of present concern, as they follow in the design in proper relation and proportion to the heating surfaces listed in the first item.

In order to work out the relations of weights of the various heating surfaces listed, a half dozen locomotives of heavy power have been selected, all superheated, covering fairly modern proportions, the pertinent dimensions of which are shown in Table I.

TABLE I—DIMENSIONS OF SIX MODERN LOCOMOTIVES USED IN COMPARING THE WEIGHTS OF VARIOUS HEATING SURFACES

Locomotive	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6
Type	Mikado	Mikado	Pacific	Mikado	Mountain	Mallet
Firebox heating surface, sq. ft.	262	292	278	234	333	337
Number of tubes.....	242	212	202	193	232	269
Diameter of tubes, in.....	2	2 3/4	2	2 3/4	2 3/4	2 3/4
Number of flues.....	30	40	40	43	50	48
Diameter of flues, in.....	5 3/4	5 3/4	5 3/4	5 3/4	5 3/4	5 3/4
Tubes and flues, length, ft. and in.....	16-6	18	18	20	22	23-6
Tubes, heating surface, sq. ft.	1,935	2,235	1,895	2,265	2,991	3,710
Flues, heating surface, sq. ft.	697	1,030	1,008	1,232	1,576	1,618
Syphon, heating surface, sq. ft.	73.5	85	88	95.4	126	97.5

The plates comprising the firebox and combustion chamber, if any, are generally 3/8 in. in thickness, with the exception of the flue sheet which ordinarily has such a small proportion exposed to heat that no serious error is made in including it as 3/8 in. in a weight calculation. Steel plate 3/8 in. thick



Distribution of Heating Surface in Terms of the Firebox Equivalent

weight of cylinders, front frames and associated parts. The back end of the locomotive boiler has developed weight as later years have added wheels to the general arrangement to meet the demand for greater tractive force and to supply adequate steam.

Early designs necessitated only small grate areas, with the grates down between the frame and the drivers. Later they were placed over the frames, then over and outside, and then back of and beyond the drivers, in some cases to the limit of clearance.

### "Kangaroo" Type Locomotive Foreseen by Forney

The following paragraphs were penned in the year 1900 by N. M. Forney, an authority on these questions in his day, illustrating quite clearly the early situation and predicting the evolution which has followed since that time:

"To get locomotives of the maximum capacity, we can load the wheels with the greatest weight the rails will bear; make the wheels of such size that reciprocating machinery need not work at too high a speed; supply cylinders which will have sufficient tractive power, and get enough heating surface to supply steam; a grate of a size that will burn the needed quantity of coal, and a firebox whose length, depth and



weighs 15.3 lb. per sq. ft. and the firebox heating surface of boiler No. 1 listed as 262 sq. ft., would therefore weigh 4,009 lb.

The hourly rate of evaporation of firebox heating surface, as used by F. J. Cole, whose authority in matters of locomotive design, has been quite generally accepted, is 55 lb. of water per square foot of heating surface for firebox, combustion chamber and arch tubes, based largely on the results of the Coatesville tests in 1912, in which the firebox and tube evaporation were taken separately. It is thought by some that at higher rates of combustion than was obtained on these tests, the evaporation rate for the firebox heating surface would be much higher and the tube rate lower. This point will remain in doubt until it is possible to make additional tests with separated firebox and tube evaporation results.

On the 55-lb. basis, the 262 sq. ft. of boiler No. 1 firebox heating surface would evaporate 14,410 lb. of water per hour which, if divided by its weight of 4,009 lb., gives an evaporation of 3.59 lb. of water per pound of firebox plate per hour. As the same unit figures of weight and evaporation would apply in the other cases, the result in each will be the same for Nos. 2 to 6 inclusive.

### Tubes and Flues Have Relatively

#### Low Evaporative Value

The heating surfaces of tubes and flues have already been stated as of low evaporation value, but how much lower is not generally appreciated. If a piece of metal gauze is held over a Bunsen burner, the flame will not pass through. The gases in a firebox, if aflame when reaching the flue sheet, are extinguished on entering the tubes for much the same reason. They have imparted heat by radiation and conduction to the firebox surfaces, but in tubes and flues they are simply hot gases, being conveyed to the front end by the draft. In their contact with the flues and tubes, they impart heat by convection, which is defined as a transfer of heat through change of position.

From dependable information and tests it may be said that gases leaving a firebox which has a temperature of 2,000 deg. F. have dropped to an average of about 1,250 deg. in the first foot of flue travel and to 750 deg. in 10 ft. If 20 ft. long, the gases leave the last foot at 600 deg., but the front end temperature, because of radiation and other causes, will be 450 to 500 deg.

Thus it will be seen that 75 per cent or more of the heat transfer has taken place in the first 10 ft. of travel, leaving little for the second 10 ft., which might be cut down 2 ft. or even 4 ft. without great loss of evaporation effect. For flues longer than 20 ft. the addition is quite ineffective and possibly should be discounted on account of the additional draft required.

The base figure for calculation of the hourly rate of tube and flue heating surface is 10 lb. of water per square foot of the outside heating surface of 2¼-in. tubes, 18 ft. long, 15/16 in. spacing, or a ratio of 1 to 5.5 as compared with firebox heating surface. Thus it becomes necessary to equate flue heating surface by dividing it by such a factor as will properly express its evaporative value in terms of the firebox rate of 55 lb. evaporation rate, giving a total of 26,675 lb. evaporated per hour. The weight of the tubes and flues of No. 1 is 9,958 lb. The weight of water evaporated divided by this figure gives 2.67 lb. of water per pound of tubes and flues.

Fortunately the wall thickness of tubes is about one-quarter that of firebox plates, as otherwise the evaporation per pound of material would be proportionately decreased. The figure deduced in the case of No. 1 is high on account of the excess of the ratio of tube to flue heating surface, which is 2.8, while in the other examples it runs about 2.

The hourly evaporation rate per pound of tubes and flues

decreases with the addition of length, the amounts derived from the examples noted being as follows:

	Length of tubes and flues	Evaporation per hr. per lb. tubes and flues
No. 1 .....	16 ft. 6 in.	2.67 lb.
No. 2 .....	18 ft. 0 in.	2.06 lb.
No. 3 .....	18 ft. 0 in.	1.93 lb.
No. 4 .....	20 ft. 0 in.	1.82 lb.
No. 5 .....	22 ft. 0 in.	1.78 lb.
No. 6 .....	23 ft. 6 in.	1.74 lb.

Although Nos. 2 and 3 both have 18-ft. tube lengths, the combination of 2-in. tubes and 5¾-in. flues of No. 3 does not give as favorable results as the 2¼-in. tubes and 5½-in. flues in No. 2. The decrease in evaporation as between 18-ft. and 23-ft. 6-in. lengths is 15½ per cent, although the increase in length and weight is almost 30 per cent, showing the futility of long flues. In any event it would seem that the return in evaporation is around 2 to 1 for each pound of material in firebox heating surface, as compared with each pound of tube and flue material.

Tubes and flues are necessary in locomotive type boilers, but their importance as effective heating surface has sometimes been over-estimated. As a matter of fact they may be reduced to the actual necessity of smoke and gas conveying to the front end and much saving effected in trading off for twice as valuable weight in furnace proportions; but that is not all.

The well-known shortcomings of the locomotive type boiler as an evaporating unit are due to lack of circulation and the attendant troubles of sluggish water areas, high range of structural temperatures and the stresses and strains set up thereby, causing cracks, leaks and maintenance and no very great factor of serviceability.

The establishment of the status of thermic syphons as standard boiler fixtures on a number of roads designed to promote increased safety, evaporation and circulation, leads to a consideration of their value in terms of weight as compared with the firebox and flues already covered, and their influence on general maintenance and serviceability of the locomotive as a whole.

While the fact that syphons are located in the firebox and participate in heat transfer of most favorable character gives them a claim to adding 15 to 40 per cent of the firebox heating surface, dependent on the number and dimensions used, their efficiency or rate of evaporation is at least double that of the firebox heating surface if credited with the effect of circulation on their own and all other heating surfaces of the boiler.

### No Evaporation Without Circulation

There will be no evaporation without circulation, as water is a non-conductor of heat and every water particle must be brought into contact with heating surface for heat transfer up to the point of evaporation. Hence the necessity for increase of circulation in locomotive type boilers which normally are not of most advantageous design for evaporation purposes. Syphons not only supply heating surface as already stated, but also the means for passing the entire volume of boiler water through them many times an hour. The definite and vigorous water circulation thus established results in increased safety of operation, a reduction of general maintenance and increased fuel economy from increased evaporation and adds to the serviceability of the locomotive as a whole.

Both road and standing tests indicate a 12½ per cent increase of equivalent evaporation for a syphon-equipped boiler over a similar boiler not so equipped. This gives a definite figure of what to expect from syphon operation throughout a fair range of capacity work. The heat actually absorbed by evaporation is, however, net and does not cover the heat wasted at the stack, spark and ash pan losses. The total coal saving is that which is not shoveled from the coal space

after supplying coal to cover the work done and the losses incident thereto.

#### Coal Consumption Tests of Syphon and Non-Syphon Engines

Many roads prefer to test for the coal saved in operation as between syphon and non-syphon engines of the same class, ascertaining the amounts and percentage of saving per 1,000 adjusted ton miles. The grand average of 19 such tests, on both saturated and superheated locomotives, for various classes, services, localities and seasons shows 16¾ per cent savings on the above basis for syphon-equipped locomotives.

In order to be conservative, the coal saving at 15 per cent will be assumed and the effect of the syphon if applied to the boiler for No. 2 shown, as it is a better design for some reasons than No. 1. On the assumption of burning instead of saving the 15 per cent of the coal consumed by the non-syphon engine, the result would be practically an increase of boiler horsepower to that extent, provided the increase could be used, which may be expressed in terms of a corresponding increase in the equivalent heating surface value of the boiler as a whole.

The sketch is a block diagram giving a distribution of the heating surfaces by percentage, based on a total heating surface derived as explained above. On the left are the proportions of the arch tube boiler, on the right those of the syphon-equipped boiler, showing the tubes and flues as 56.5 per cent, the firebox as 27.26 per cent and the syphon heating surface of 85 sq. ft. as 8 per cent. These total 91.76 per cent, all estimated on the standard 55 lb. evaporation rate, and it requires 8.24 per cent to complete the 100 per cent. This completion expresses the syphon effect by circulation on the general evaporation of the boiler. This doubles the value of the syphon as an evaporating unit, whether in terms of weight or heating surface, as compared with the standard 55 lb. performance. For the firebox this has been found to be 3.59 lb. of water per lb. of heating surface. As syphons are made of ¾-in. firebox steel, they may, therefore, be credited with 7.18 lb. of water evaporation per pound of material, or in general terms, twice that of firebox heating surface and four times that of flue surface.

Due consideration of these relations will afford the opportunity of using the more effective surfaces in boiler design to

an advantage in weight of heating surfaces proper and in turn modify the container features of the boiler in new work. This reduction in weight should not go to the point of loss of necessary adhesion weight but that can be obviated by larger bulk of boiler water, which would be advantageous rather than detrimental and water is cheaper than steel.

A 2¼-in. tube 32 ft. long has a displacement of 1 cu. ft. and weighs 70 lb., while 1 cu. ft. of water weighs approximately 60 lb. at the lower temperatures of boiler operation, so that trading water for tubes can be done to a considerable extent without disadvantage. While this is a feature for consideration in new designs, it also applies to syphon application in existing power where omission of certain tubes will facilitate arranging the lower connection. It would be particularly the case when a combustion chamber can be added to a straight flue sheet firebox for an increase of furnace volume and heating surface.

A concrete example of what syphons can do may be illustrated by considering boiler No. 4 of this discussion. In this case the heating surfaces of firebox, combustion chamber, tubes and flues weigh 21,418.5 lb. and should develop 2,183 boiler horsepower at the standard rate of evaporation. This is equivalent to 98.1 lb. of material per horsepower and is 85.8 per cent of the maximum cylinder horsepower. Addition of syphons of 95.4 sq. ft. of heating surface and weighing 1,456.6 lb. increased the total weight of heating surfaces to 22,875 lb., but the boiler is now capable of developing 2,598 boiler horsepower, or 102.2 per cent of the maximum cylinder horsepower. The weight of heating surface per boiler horsepower is now 88 lb., a saving of 10.1 lb. per boiler horsepower, or 10.3 per cent in material that costs money for initial purchase and maintenance throughout its life. To this may be properly added the coal saving, reduction in general boiler maintenance and longer life, as well as a definite addition of safety and serviceability. Suppose, however, it was desired to equip the above locomotive with a 100 per cent boiler, but to omit syphons. It would require somewhat more than 15 per cent increase of the firebox and flue heating surfaces, or about 3,500 lb., and the increase of the shell, wrapper and other boiler parts at a conservative estimate would be 11,000 lb. more. The larger shell, wrapper sheets and heads, increased number of staybolts and braces, all are expensive to buy and maintain thereafter.



Railway Motor Car Built by Jim Stewart & Stevenson, Houston, Texas, for the Texas City Terminal. Length over-all, 25 ft. 6 in.; Seating Capacity of Passenger Compartment, 20



## General News Department

The Interstate Commerce Commission has announced hearings before an examiner regarding the excess income reports of the Detroit & Toledo Shore Line and the Laurinburg & Southern.

The passenger and freight wharves of the Southern Pacific along the river front at Sacramento, Cal., with their contents were destroyed by fire on May 7. The value of the sheds was estimated at \$270,000 and of the contents at \$80,000. Southern Pacific river boats will use the Western Pacific wharves temporarily.

Penalties for the use of coal cars for the transportation of commodities other than coal, in violation of the orders of the Interstate Commerce Commission during the scarcity of coal following the coal miners' strike in 1922, are sued for in a suit against the New York Central filed by the government in the federal court at New York on May 12. There are two suits, each containing 25 counts, and the maximum possible penalty is \$500 on each count.

Real sleeping-car berths are to be provided for the waiters, cooks and other persons who operate the dining cars of the Oriental Limited trains of the Great Northern Railway. Half of one car is to be given up to this service, and the use of cots made up in the dining cars will be done away with. As noted in a previous news item, the Oriental Limited trains will, beginning with June 1, be made up wholly of new cars. On these and other transcontinental trains, it is the custom to keep the dining cars and their crews with the train throughout the trip of three days and three nights.

The Chicago, Milwaukee & St. Paul is sending one of its largest electric locomotives on a three-months' tour of the states east of the Mississippi to allow the people of that part of the country to become familiar with the locomotives used in the Cascade Mountains. The engine will be exhibited in Detroit, Mich., Cleveland, O., New York, Philadelphia, Pa., Boston, Mass., and other New England cities. It will then be taken to Washington and Baltimore and from there will be sent back to Chicago. The engine will be accompanied by a coach fitted up with a lecture room and a car for the use of members of the party. Motion pictures of electrified trains moving through the mountains will be shown.

### Grade Crossing Elimination Ordered in Toronto

An order affecting a number of railway crossings in the city of Toronto has just been issued by the Dominion Board of Railway Commissioners which heard on February 14 an application of that city for a ruling on the right of way at those crossings. The board has ordered among other things that no change in grade or interference with the width of right-of-way be made on the main double tracks of the Canadian Pacific's Toronto-Galt line and the Toronto, Grey & Bruce sub-divisions and of the Canadian National's Brampton sub-division; and that subways be constructed at a number of streets in the northwest part of the city.

### C. & A. Wins Skirmish with Missouri River

The Chicago & Alton and the communities of Glasgow, Gilliam and Slater, Mo., have apparently succeeded, temporarily, in their strenuous efforts to keep the Missouri river from changing its course near Glasgow, which would render useless a railway and a highway bridge, destroy the railroad's embankment and inundate many acres of fertile farm lands. The river was actuated by steady winds from the north for several days and advanced far enough in its new course to begin undermining the railway embankment when the railroad and citizens took action. A number

of old gondola cars were dumped into the river to stem the current, and for a few days the outcome was doubtful; but it is now believed that the embankment can be held until permanent protection can be provided.

### Highway Crossing Campaign

The campaign to be conducted by the American Railway Association to reduce the number of highway crossing disasters will begin on June 1 and will continue until September 30. H. A. Rowe, chairman of the committee, announces that elaborate plans have been completed for the campaign, with the co-operation of the National Association of Railway & Utilities Commissioners, the American Automobile Association, the National Safety Council and the National Automobile Chamber of Commerce, as well as the United States Chamber of Commerce and its various members. It will cover the entire United States. In a conference of the interested organizations just held in Chicago, a resolution was adopted urging that drivers of motor cars reduce their speed to ten miles an hour 300 ft. from a railroad crossing and not increase that speed until they are absolutely sure that it is safe to proceed.

Commissioner McChord of the Interstate Commerce Commission on May 10 presented the prizes to the winners in the contest for the most appropriate poster and slogan to be used in connection with the campaign.

### New Program Arrangement for the A.S.T.M. Meeting

As previously announced in these columns, the twenty-seventh annual meeting of the American Society for Testing Materials will be held at the Chalfonte-Haddon Hall, Atlantic City, N. J., on June 24 to 27. A departure is being made this year in the arrangement of the program by which parallel sessions will be held practically throughout the meeting with no afternoon sessions after the first day. Registration starts on Monday, June 23, and that day and Tuesday morning have been reserved for committee meetings. The general arrangement of the program is as follows:

Tuesday, afternoon, symposium on corrosion resistant, heat resistant and electrical resistance alloys; and coal, timber, rubber and textiles; evening, continuation of symposium; and paints, petroleum products, insulating materials and thermometers. Wednesday, morning, non-ferrous metals, corrosion and metallography; and lime, gypsum and ceramics; evening, president's address and administrative committee reports. Thursday, morning, steel; and road and paving materials and waterproofing; evening, methods of testing and nomenclature. Friday, morning, magnetic analysis and fatigue of metals; and cement and concrete; evening, wrought and cast iron and cast iron pipe; and concrete and reinforced concrete.

### Railway Claim Agents

The Association of Railway Claim Agents, W. H. Failing, president, will hold its annual meeting at West Baden Springs Hotel, West Baden, Ind., Wednesday, Thursday and Friday, May 21, 22 and 23.

Addresses are expected from President H. R. Kurrie (C. I. & L.) and President L. W. Baldwin (M. P.). The principal papers on the program are: Developing the Extent of Physical Injury, by Dr. E. V. Milholland (B. & O.); X-Ray Pictures, Dr. S. B. Hall (M. P.); Education of the New Claim Agent, W. J. Holden (N. Y. C.); Injustices in the Administration of Compensation Laws, O. G. Browne (N. Y. C.); Should Railways Compromise Crossing Auto Cases When Not Liable? W. H. Mooney (M. P.); Value of Courtesy, Robert Irwin (A. T. & S. F.); Overcoming Adverse Public Sentiment in Large Cities, H. W. Colson (A. B. & A.); "The Written Statement," Harry Allard (St. L.-S. F.); "What Dividends Does This Association

Pay?" E. W. Sprague (I. C.); The Law of Subrogation, S. R. Brittingham (S. A. L.); Taking Photographs of Claimants, T. R. W. McRea (C. N.); "Proper Technic of Using a Shorthand Reporter in Taking Statements of Injured Persons," E. M. Mann (N. Y. C. & St. L.); Extent to Which Company Surgeons Should Have a Factor in Settlements, C. C. Gleiner (N. Y. C.).

### Canadian Roads Improve Position

Canadian railways as a whole showed an improvement in net operating revenues for February this year over the same month last year of \$3,394,037 and a reduction in the operating ratio from 106.72 per cent to 95.47 per cent. Freight traffic was heavier by 24.2 per cent and passenger traffic by 14.2 per cent increasing freight revenues by \$3,280,830 or 15.7 per cent, passenger revenues by \$497,814, or 11.2 per cent and total revenues by \$3,942,471, or 13.8 per cent. Maintenance of way and structures expenses increased slightly and maintenance of equipment by \$708,384, or 9.7 per cent, but transportation expenses were reduced by \$407,899 or 2.5 per cent despite the increased traffic and total operating expenses were heavier by only \$548,433, or 1.8 per cent. There was a slight decrease in the average number of employees, but an increase in the total pay roll of \$574,128, or 3.2 per cent. Earnings per train mile increased 14 cents for freight trains and 8 cents for passenger trains.

Following is a summary of the earnings and expenses of the railways for the months of January and February, 1924 (combined) as compared with the same two months in 1923:

ALL RAILWAYS			
	1924	1923	
Operating Revenues .....	\$65,874,450.60	\$61,991,706.47	
Operating Expenses .....	62,630,127.43	63,217,451.16	
Net Operating Revenues .....	3,244,232.17	Dr. 1,225,744.69	
Operating Income .....	2,333,385.72	Dr. 1,460,347.72	

### Program for Meeting of American Association of Railroad Superintendents

The American Association of Railroad Superintendents will hold its 31st annual convention at the Hotel Statler, Buffalo, N. Y., on June 18, 19 and 20. The program calls for discussions on: the proper classification of freight trains to avoid intermediate and terminal switching; how to improve efficiency in terminals; maximum trainloads; the economical operation of work trains; the maintenance of manifest and time freight schedules; the loading of cars to maximum capacity; the elimination of train and yard accidents; abolition of the 31 order and the exclusive use of the 19 order; long engine runs; how transportation officers may best improve relations between the railroads and the public; the elimination of personal injuries; the elimination of the killing of live stock; maximum miles per car per day, and grade crossing accidents. A special committee of members from the railroads of Mexico will present a report on "How Interchange of Business Between Mexico and the United States May Best Be Stimulated."

### Six New Storage Battery Cars on C. N. R.

The Canadian National will commence to operate within a few days six new storage battery cars. Three of these cars will run from Montreal to points nearby and will add considerably to the suburban service at present being given by the system.

One of the new storage battery cars will be placed on the Tunnel Terminal route from Montreal to St. Eustache and will provide five additional round trips per day between these two points. This service goes into effect on May 18.

On May 19, one of these cars will commence to operate from the St. Catherine Street East station of the Canadian National between Montreal and Rawdon. Commencing May 19, one of these storage battery cars will provide daily service between Montreal, Granby and Waterloo, leaving from Bonaventure station. Of the remaining three cars, one will be placed in operation between Ottawa and Pembroke, another between Toronto and Oakville and the third will be used for relief purposes.

These cars are 53 ft. long, about 9 ft. wide, 12 ft. high, have vestibule ends and can be operated from either end. The interior has a mahogany finish and is equipped with canvas-lined rattan seats. There is seating accommodation in each car for fifty passengers, in addition to baggage space.

### New Officers for Canadian Railway Club

C. E. Brooks, chief of motive power of the Canadian National, was elected president of the Canadian Railway Club at the twenty-second annual meeting and smoker of the club at the Windsor Hotel, Montreal, on May 13. In addition to the reading of the annual reports and the election of officers, a varied program of entertainment was provided by members from companies performing at local theatres.

Other officers elected were as follows: First vice-president, J. A. Shaw, electrical engineer, C. P. R.; second vice-president, E. R. Battley, superintendent of motive power, Eastern lines, C. N. R.; executive committee, J. Burns, works manager, C. P. R. Angus shops; W. F. Connal, mechanical engineer, C. N. R.; J. E. Muir, assistant works manager, C. P. R. Angus shops; T. M. Hyman, superintendent car shops, C. N. R.; G. Whiteley, assistant superintendent of motive power, C. P. R., and W. A. Booth, director of safety and first aid, C. N. R.; audit committee, J. W. Fontaine, chief clerk to auditor of stores and mechanical accounts, C. P. R.; A. McDonald, assistant to superintendent of motive power, C. N. R., and E. G. Jackson, president and general manager of the International Equipment Company; treasurer, P. P. Reynolds, chief clerk to chief of motive power and rolling stock, C. P. R.; secretary, C. R. Crook, head timekeeper, motive power, Dewar shops, C. N. R.

### A Lesson Without Words

Familiarity breeds contempt, and men who crawl through a standing freight train, and thus save a few seconds in the time of a journey from one side of the track to the other, are likely, after repeated successes, to try the same process even if the obstructing train be found to be in motion. But a train in motion has an added element of danger, and the accompanying engraving affords



one illustration of it. The picture shows the result of a mishap which occurred very suddenly to a train which was moving very slowly. A copy of the picture, enlarged, hangs in the office of the Ohio Brass Company, Mansfield, Ohio, in front of whose factory the incident occurred. It is posted "as a silent warning to those of us who are so impatient that they must climb between cars."

### Progress in Application of

#### B. & O. Shop Plan on C. N. R.

A survey of the main shop points on the Canadian National has been begun, starting with the Winnipeg shops, preparatory to the experimental application of the co-operative shop work plan, known as the Baltimore & Ohio co-operative plan, to the Canadian National Railway System. The plan aims at co-operation between the employees of the shops and the management in the working of the shops with a view to less waste and better production; a voice in shop management for the men; and a share for the employees in the benefits accruing from co-operation. It was endorsed by the convention of Division 4, Railway Employees' Department, of the American Federation of Labor representing all railway shop crafts in Canada. It has also received the approval of Sir Henry Thornton, president of the C. N. R. Following the Division 4 conference B. M. Jewell, president of the Railway Employees' Department of the A. F. of L.; William H. Johnston, president of the International Association of Machinists, and father of the co-operative shop plan; and Capt. O. S. Beyer, Jr., consulting engineer for the shopmen, and representatives of the shop crafts of the system, met Sir Henry Thornton.

Reporting on this conference to officials of Division 4 Mr. Jewell



stated, "Sir Henry Thornton said he was convinced that this was the most important gesture that has been made in the industrial world in years and that it has within it the germs of the solution of all our industrial problems. He was prepared to co-operate fully in order to make the experiment a success." After the survey of the Winnipeg shops it was stated at the offices of Division 4 in Montreal that a survey of all the shops in Eastern Canada would be made. A joint report will then be made to Sir Henry by Capt. Beyer and the international unions. The shop for the experiment in co-operation has not yet been selected, but the selection will be made by the shop crafts with the assent of the employees and the management.

### Freight Traffic in March

The average daily movement per freight car for the month of March was 27.3 miles per day, according to a compilation by the Bureau of Railway Economics. This exceeded by three-tenths of one mile the average for March, 1923, and by three and three-tenths miles the average for March, 1920.

The average load per freight car in March was 26.6 tons, a decrease of one and three-tenths tons compared with March last year, and one and one-half tons under the average for the same month in 1920.

Freight traffic in March amounted to 36,420,962,000 net ton miles, a decrease of 2,800,772,000 net ton miles or 7.1 per cent compared with March, 1923. Compared with the same month in 1920, it was a decrease of 1,431,090,000 net ton miles or 3.8 per cent. In the Eastern district freight traffic totaled 19,114,271,000 net ton miles, a decrease of 7.6 per cent compared with March last year, while in the Southern district it totaled 5,168,399,000 net ton miles or a decrease of 7.2 per cent. Freight traffic in the Western district amounted to 12,138,292,000 net ton miles or a decrease of 6.3 per cent under March, 1923.

For the first three months this year, freight traffic amounted to 106,884,737,000 net ton miles, a decrease of 2.4 per cent under the corresponding period last year when the greatest volume of traffic for any corresponding period on record was handled by the railroads.

### Application of Section 15a to Electric Railways

The Interstate Commerce Commission has decided that no hard and fast rules can be laid down upon which reliance can be placed in classifying electric railways as to whether or not they are to be considered as engaged in the general transportation of freight to such an extent as to include them in the application of section 15a of the interstate commerce act. Each road must be considered by itself, the commission says in a report on the subject, following a hearing; but to effect a classification covering operation of such lines since the law became effective as well as for the future, all electric railway operating companies will be served with the general orders issued from year to year requiring reports of value and of railway operating income and they will also be required to respond to a questionnaire calling for information upon matters deemed controlling in determining the status of electric lines. Those which claim exemption from the provisions of section 15a may so state, omitting for the time being data with respect to values and income. Congress evidently had in mind, the commission said, the steam railroad system of the country, then largely under federal control, and, "considering the responsibilities as well as the benefits of carriers under section 15a it seems clear that Congress intended to exclude interurban electric railways generally from its operation, and to include them only when engaged in such general transportation of freight as would cause them to resemble steam roads in the performance of that function."

### C. N. R. Branch Bills Up for

#### Final Passage by Commons

After three weeks of more or less acrimonious sittings the Select Committee on Railways, Canals and Telegraph Lines of the Canadian House of Commons early this week disposed of the 26 Canadian National branch line bills, the total estimated cost of which is about \$30,000,000. These bills will now be submitted to the House of Commons for third reading (final passage) and then be sent to the Senate where a special committee will deal with them. It is expected that the Senate will handle them even

more harshly than the Conservative members of the House of Commons, for there is a minority of Conservatives in the House committee and they were powerless to prevent their passage through the House but there is a Conservative majority in the Senate and they can throw out as many of these bills as they desire. This year, however, the bills are separate and need not all be rejected, whereas last year the branch line program of the Canadian National was submitted to the Senate in one omnibus bill which it rejected.

It is stated by officers of the Canadian National that even if the bills are now passed by the Senate it will be too late this year to do any substantial work on the lines approved and that another year has been lost in the efforts to expand the traffic facilities of that system. This condition is attributed by the Liberal and Progressive members of the House to the persistent opposition of the Conservatives and the latter's insistence upon obtaining detailed information as to these lines, which information the Minister of Railways and Canals, George P. Graham, stated in the Committee last week had never before been asked for and had never been given. Mr. Graham further stated that in the session of 1920 a large number of branch lines were passed through the House without the then Conservative government giving any information whatever either as to the cost or location of the lines.

There were lively exchanges before the committee last week when one of so-called contentious branch line bills was being dealt with. This provided for the construction of a branch line in Nova Scotia from Sunny Brae to Guysboro, 67 miles, at an estimated cost of \$3,500,000. There had been repeated charges in the House by the Conservatives that this was a political road and that they would vigorously oppose it on that ground. Sir Henry Drayton, leader of the Conservatives in the committee, asked Sir Henry Thornton, president of the Canadian National, to explain the situation, and the latter read the statement which had been submitted to the Minister. Final surveys would be completed this year, grading next year and track-laying and final construction in 1926. The present intention was to build a line to open up that territory and employ steeper grades in the immediate construction in order to make a cheaper line. This was merely the carrying committee told of the gold ore that would be moved by the proposed line.

### Reading's New Camden Terminal Opened

The Reading opened its new passenger terminal at Camden, N. J., across the Delaware river from Philadelphia, on May 14. This terminal is on the waterfront and serves as a transfer point between trains and ferryboats in the Reading's service between Philadelphia and Atlantic City and other points on the New Jersey coast.

The new terminal houses four electrically operated ferry slips, a large train shed and concourse, waiting rooms for men and women, a restaurant, a barber shop and the offices of the Delaware River Ferry Company and the seashore lines of the Reading Company.

The concourse is 328 feet long and 105 feet wide. It leads directly to the train shed, which contains 10 tracks for regular service and 4 additional tracks for use when travel is unusually heavy, each track long enough to hold a fourteen-car train.

Facilities have also been provided to expedite the handling of motor vehicles using the ferry service. The concrete driveways are each wide enough to accommodate four lines of vehicles. There are separate driveways for baggage and express.

The main entrance on the land side of the building is from Mechanic street and Atlantic avenue. This part of the structure consists of a two-story office building 115 ft. long by 42 ft. wide. On the first floor of this building is the lobby, the ticket office and facilities for handling express. The second floor is occupied by the offices of the Reading's seashore line. At the opposite end of the concourse from that occupied by the office building is a brick power house used to generate the power necessary in the operation of the terminal.

Adjoining the terminal proper is a large storage yard for cars and a railroad Y. M. C. A. building for the use of the trainmen. Several grade crossings have been eliminated by the relaying of the tracks leading into the train shed. Provisions have been made, also, for the adaptation of the terminal to the use of double-deck ferryboats should this become necessary.

The signal tower and battery house, which controls all of the traffic in and out of the terminal, is a three-story building of

brick and concrete, the first floor of which is used for the storage of signal equipment and for the heating plant, the second for the generator and battery racks, the relay racks and the general working apparatus of the tower, and the third-story for the lever room.

The terminal was opened with appropriate ceremony. Thousands of guests were in attendance, the company having provided special train service to care for them. Among the distinguished guests present were the governor of New Jersey, the mayors of Camden and Philadelphia and municipal authorities of important New Jersey points served by the Reading.

### Air Brake Appliance Association Exhibit at Montreal

A total of 28 companies, members of the Air Brake Appliance Association, were represented by exhibits at the Mount Royal Hotel, Montreal, Que., during the convention of the Air Brake Association, which was held May 6, 7 and 8, 1924. At the annual meeting of the exhibiting organization, held during the convention of the railroad organization, the following officers were elected to serve during the coming year: Joseph Sinkler (Pilot Packing Co.), president; John Wright (Westinghouse Electric & Manufacturing Company), secretary and treasurer; C. L. Mellor (Barco Manufacturing Company), Fred Speer (Gustin Bacon Manufacturing Company), and J. W. Read (Canadian Westinghouse Company), executive committee.

The list of exhibitors is as follows:

Anchor Packing Company, Philadelphia, Pa.—Air pump packing, style 166. Represented by W. C. Robb and J. P. Landreth.

Ashton Valve Company, Boston, Mass.—Air brake record gages, air brake quadruplex gage, locomotive driving quartering gage, steam gages and safety valves. Represented by H. O. Fettinger and J. F. Gettrust.

Barco Manufacturing Company, Chicago—Locomotive power reverse gear, 3 V engine tender connection; smoke box blower fitting, and flexible joints for locomotive piping. Represented by C. L. Mellor, F. H. Stiles and A. S. Lewis.

Bradford Corporation, New York, N. Y.—Chambers throttle valve and Bradford rocker type draft gear. Represented by Lewis Rhodes.

Crane Company, Chicago—Air brake fittings and cap valves and literature. Represented by F. W. Venton.

Detroit Lubricator Company, Detroit, Mich.—Automatic exhaust nozzle covers, flange oiler, bell ringers and air pump lubricators. Represented by A. G. Machesney and J. D. Ross.

Joseph Dixon Crucible Company, Jersey City, N. J.—Brake cylinder lubricant, triple valve graphite and other graphite products. Represented by J. M. Willits and H. A. Nealley.

Edna Brass Company, Cincinnati, Ohio—Injectors, lubricators, water column, mechanical force feed lubricator, boiler checks and locomotive appliances. Represented by E. O. Corey and F. S. Wilcox.

J. B. Ford Company, Wyandotte, Mich.—Literature. Represented by Harry R. Enoch.

Franklin Railway Supply Company, Ltd., Montreal, Que.—Moving pictures, showing operation of the locomotive booster. Represented by L. Brooks, W. T. Comley, R. P. Peckett, Jr., H. Hague, W. W. Coventry and Frank Peters.

Foster, Walter H., Company, New York—Semi-automatic valve finishing machine for air brake equipment. Represented by H. L. Kenah.

Garlock Packing Company, Palmyra, N. Y.—Asbestos rubber packings. Represented by H. J. Ramshaw and H. A. Clark.

Johns-Manville, Inc., New York—General packings for locomotives and cars, reverse gear packing cups, train pipe covering, engine insulating type packing and booster ball joint packing. Represented by George Nicol, L. Papineau and Charles Towne.

Leslie Company, Lyndhurst, N. J.—Steam heat pressure regulator and literature. Represented by S. Inglis Leslie and J. J. Cizek.

Manning, Maxwell & Moore, Inc., New York—Inspirators and safety valves. Represented by H. Bush and W. H. Williston.

Metallo Gasket Company, New Brunswick, N. J.—8½-in. Westinghouse air brake pump gaskets, boiler feed water gaskets and valve discs. Represented by P. L. Rhodes and L. A. Ward.

W. H. Miner, Chicago—Car brake and safety hand brake. Represented by J. H. Link and W. A. Berger.

New York Air Brake Company, New York—New assembly design for steam piston and rods, centrifugal strainer of large area for air pumps, atomizing lubricator for air pumps and Type I pressure controller. Represented by E. F. Wentworth, N. A. Campbell, C. A. Campbell, G. A. Allen, L. W. Sawyer, and Bert Haynes.

New York & New Jersey Lubricant Company, New York—Non-fluid oil brake cylinder lubricant. Represented by J. H. Bennis.

Pilot Packing Company, Chicago—Packing. Represented by Joseph Sinkler and Robert Sinkler.

Schaefer Equipment Company, Pittsburgh, Pa.—Truck lever connections, brake levers, brake rod jaws and brake beam hangers. Represented by E. J. Searles and Harry G. Doran.

Simmons-Boardman Publishing Company, New York—Railway Age and Railway Mechanical Engineer. Represented by R. F. Duysters and Marion B. Richardson.

Standard Robinson Connector, New York—Automatic train line connector. Represented by J. P. Kenny and Joseph Robinson.

Superior Flake Graphite Company, Chicago—Air brake fittings, cap valves and literature. Represented by F. W. Venton.

Universal Draft Gear Attachment Company, Chicago—Hand brake attachment and ratchet lever brake. Represented by H. L. Wrigley, P. B. Camp, Webb Krauser and C. Carmichael.

Vapor Car Heating Company, Chicago—Locomotive pressure reducing valve, locomotive stop valve and flexible metallic joints. Represented by Lewis Rhodes.

Westinghouse Air Brake Company, Wilmerding, Pa.—Flanged union pipe fitting for connection to auxiliary reservoir and brake cylinder with detached freight brake equipment and improved design of centrifugal dirt collector. Represented by J. B. Wright, H. J. Robinson, F. B. Johnson, W. M. Sleet, Mr. Houston, F. W. Nagle, R. P. Ives, F. W. Ainsworth and E. W. Neavis.

Worthington Pump and Machinery Corporation, New York—Locomotive boiler feed pump and feed water heater. Represented by D. R. Coleman, W. W. Hoyt and George Law.

## Traffic News

The Chicago-Minneapolis Tours, Inc., on May 11 inaugurated tourist bus service between Chicago and Minneapolis, a distance of 421 miles.

The Consolidated Ticket Office at Oklahoma City, Okla., has been abolished and the several lines have established their individual city offices.

W. B. Lewis, formerly in the employ of the Illinois Central and for the past five years engaged with lumber dealers in Birmingham, Ala., has been appointed district manager of the Southern Hardwood Traffic Association, with headquarters in Cincinnati, Ohio.

The Railroad Commission of Nebraska has granted the Western Barge Line authority to issue and sell \$13,000 of stock to complete the building of its freight steamboat and to pay for four barges, which are to be used on the Missouri river in carrying freight between Omaha, Nebr., Decatur, Ia., Macy and Sioux City.

### Montreal-Washington Through Train

Announcement is made that beginning with June 16, there will be a through daily express train between Montreal and Washington, to be composed of new cars throughout. The route is over the Canadian National, the Central Vermont, the Boston & Maine, the New York, New Haven & Hartford and the Pennsylvania. The southbound train will leave Montreal in the evening and the northbound will leave Washington in the morning.

### Mr. Hoover Urges Storage of Coal

Purchase of reserve stores of coal during the early part of the year by large consumers is urged in a letter which has been addressed by Secretary Hoover of the Department of Commerce to the secretaries of national and state trade associations. He says, in part:

"The fall car shortage always has the effect of increasing the price of coal and of seriously disturbing the whole economic machine. Security lies in repeating the storage performance of last year. . . . Outside of strike years, these summer months are universally the period of lowest bituminous coal prices. . . ."

### Application of Section 28 Postponed

By action of both the Shipping Board and the Interstate Commerce Commission, following a conference of the committee composed of commissioners of both boards on May 8, the operation of section 28 of the merchant marine act, intended to confine the application of export and import rail rates to freight carried in American ships, has again been indefinitely postponed. On that date the Shipping Board by a vote of 4 to 3 adopted a resolution certifying to the Interstate Commerce Commission that "doubt has arisen whether shipping facilities under the American flag are adequate in all respects, . . . and withdrawing its previous certificate. The commission on May 10 issued an order setting aside its order of March 11 which had terminated its suspension of the provisions of section 28. The certificate of the Shipping Board included the following:

"WHEREAS, Evidence has been presented by exporters and importers, relative to their needs, which evidence had not been previously presented, notwithstanding this board held public and widely advertised hearings; from which evidence thus recently produced, it appears that existing rates by rail to various ports are not properly co-ordinated; and also, that special shipping facilities, to an extent not heretofore anticipated, may be required in the transportation of particular commodities; and whereas it is the desire of this board that the action heretofore taken by it shall not result in the disturbance of commerce in its natural flow; and to the end that opportunity may be given for the adjustment of all factors involved. . . ."

"It is the intention of the board . . . to continue the intensive study of the subject with the purpose of making Section 28 effective within a reasonable time."

It is expected, the board said, that by the beginning of the new year the situation will have so clarified itself that section 28 may then go into effect.



## Commission and Court News

### Interstate Commerce Commission

The commission has again postponed the effective date of its order in the assigned car case from June 1 to August 1. The order was originally made effective as of September 1, 1923, but has been postponed from month to month since.

#### Alabama Passenger Fares Called Discriminatory

The Interstate Commerce Commission has issued a report finding that a reduction in passenger fares to three cents a mile, with a 1,000-mile book to be sold for \$25, ordered by the Alabama (Public Service Commission, would, if put in effect, result in intrastate rates lower than the corresponding interstate fares and an unjust discrimination against interstate commerce. The fares ordered by the Alabama commission have never been put in force but have been temporarily enjoined by the federal court. The commission holds that there is no justification for lower intrastate rates in Alabama. Its conclusion, however, is without prejudice to the right of the Alabama authorities or of any other party in interest to apply for a modification of such conclusion as to any specified intrastate rates on the ground that they were not related to the interstate rates in such a way as to contravene the provisions of the interstate commerce act.

Commissioner Aitchison, in a dissenting opinion concurred in by Commissioners Potter, Campbell and Cox, says the findings of the majority are not based on any violation of section 3 of the act, and that, "jurisdiction being lacking, in the circumstances, we should avoid making a gratuitous finding which can have no legal force, no matter how many parties may request us to make such a purposeless determination."

### State Commissions

Six railroads, the Union Pacific, the Chicago, Burlington & Quincy, the Colorado & Southern, the Atchison, Topeka & Santa Fe, the Denver & Rio Grande Western and the Chicago, Rock Island & Pacific, have filed protests with the Public Utilities Commission of Colorado against petitions requesting the granting of 17 certificates of public necessity and convenience for the operation of as many motor bus lines in various parts of Colorado. The Atchison, Topeka & Santa Fe filed five additional protests against the issuance of as many certificates for bus lines which would center at Denver and operate between that city and the more important surrounding towns. The other bus lines center principally at Denver, Colorado Springs, and Pueblo.

### Court News

#### Care of Pregnant Live Stock

The Nebraska Supreme Court holds that a railroad company is not usually liable for injuries to live stock due to pregnancy unless it has actual or constructive knowledge of the fact. Otherwise it will only be charged with the care ordinarily exercised in handling animals not pregnant. But where the fact of pregnancy is plainly apparent to the company, or where a reasonable person would infer that condition, it will be liable for injuries caused by negligence in not handling the animal with due care under the circumstances, though not expressly informed of the fact by the shipper.—*Dayly v. Chicago, St. P., M. & O. (Neb.)*, 194 N. W. 676.

#### Disregard of Right of Track Order

Although it is the duty of the engineer to obey the signal or the conductor in starting his train in cases where the movement signaled for is not in violation of a train order or rule, under rule 906 it is the duty of the engineer in all cases not to start his train in violation of a train order. Therefore the Oregon Supreme Court holds that an engineer, having a train order transferring to another train right of track from Cook to Oswego,

had no right to start his train from Oswego to Cook on signal of the conductor.

It cannot be inferred, in the absence of evidence, that it is negligence for a train despatcher to give a right of track order instead of a meet order or a wait order. It was not necessary for the despatcher to send a copy of the right of track order to the operator at Oswego to be delivered there to the conductor and engineer. The standard rules do not require a copy of such order to be given to any one except the conductor and engineer. Only copies of meet and wait orders must be sent to the operator at the meeting or waiting point.

The action of all the train crew in disregarding the right of track order could not be imputable to the company as its negligence, in an action against it brought by a member of the crew for injury resulting solely from his own disobedience or his disobedience in concert with others.

The action was by the engineer of the train for injuries sustained in the collision caused by disregard of the order. Judgment for plaintiff was reversed and judgment for defendant ordered by a divided court.—*Davis v. Payne (Southern Pacific) (Ore.)*, 216 Pac. 195.

#### Actions by Nonresidents

##### Excluded from Ohio Jurisdiction

The Ohio Supreme Court holds that the amendment to section 11273, Ohio General Code, excludes from the jurisdiction of the state courts of Ohio all causes against the persons and companies therein referred to (which includes railroad companies) for injuries to person or property or for wrongful death occurring without the state of Ohio unless such claimant is a resident of the state. Actions under the federal Employees' Liability Act are subject to the limitations of the amendment. The amendment does not violate the privileges and immunities clause of the federal Constitution.—*Loftus v. Pennsylvania (Ohio)*, 140 N. E. 94.

### United States Supreme Court

#### Cars with Defective Power Brakes Must Be in Rear of Power Brake Cars After Passing Repair Station

In an action by the government against the New York Central for penalties under the federal Safety Appliance Act, the Circuit Court of Appeals, Third Circuit, certified to the Supreme Court of the United States the following question of law: "May an interstate carrier lawfully operate a car equipped with power brakes past an available repair station to destination when its power brakes, becoming out of order in transit, have been cut out of the power brake system of the train and when more than 85 per centum of the cars of the train are equipped with power brakes controlled by the engineer of the locomotive?"

The Supreme Court answered: "No, unless placed in the train in the rear of all cars having their brakes operated by the engineer."

The action concerned two long freight trains moved from Coalburg, Ohio, via Erie, Pa., to Buffalo, N. Y. All the air brakes were in working order when the train left Coalburg, but soon after the air brakes on three cars, the 10th, 40th, and 44th, became defective, and were cut out.

The engineman continued to operate the brakes on the other 60 cars. At Erie repair men and materials were available but the train was run past this repair station and on to Buffalo. The other train had 80 cars, and the facts in respect to it were substantially the same as above.

The railroad contended that, within the meaning of section 2 of the act of 1903, the cars having air brakes which were out of order were not "power-braked cars" while in that condition, and that the law did not require their brakes to be operated by the engineer, as at all times power brakes on more than 85 per cent of all the cars in the train were so operated.

The Supreme Court said, in part: "Hand-braked cars have no air line, and it is necessary that they be placed in the train to the rear of the power-braked cars. The cars having power brakes which became defective and were cut out formed a part of the air line. The air line through each of these cars was used to operate brakes on other cars after as well as before the cut-out cocks were turned. Clearly, they were associated together with

the other cars equipped with power brakes. . . . Defendant's contention would permit the hauling, in association with cars having their power brakes operated by the engineer, of 15 per cent of the cars in a train with power brakes in bad order and cut out. This would nullify the provision of Sec. 2 of the Act of 1903. It must be held that the running of the train from Erie to Buffalo in the condition above described was a violation of the law."

The question whether it was a violation of law to haul defective cars to Erie, the place of the first repair station, while associated in the train with the prescribed minimum, was not involved in the case, and no opinion was expressed upon it.—*New York Central v. United States*. Opinion by Justice Butler. Decided April 28, 1924.

### Liability of Shipper to Pay Freight Undercharges

In January, 1917, the Central Iron & Coal Company sold Tutwiler & Brooks ten carloads of coke f. o. b. seller's plant at Holt, Alabama. Before delivery, the buyers sold the coke to the Great Western Smelters Corporation of Mayer, Arizona. On instructions from Tutwiler & Brooks, and on their agreement to pay freight, the Central company delivered, at its plant, the cars of coke to the Louisville & Nashville; directed shipment to Mayer, and took bills of lading which it immediately delivered to Tutwiler & Brooks. That firm made a draft for the price on the Smelters Corporation, with bills of lading attached. The corporation paid the draft, received the bills of lading, and, on surrendering them to the delivery carrier and payment to it of the freight demanded, \$5,082.15, received the coke. Freight at the tariff rate was \$8,545.61. On discovering the undercharge in January, 1920, the L. & N. made demand on the Central company, and, on refusal of payment, sued it in the Alabama Federal District Court. A judgment for defendant on a directed verdict was affirmed by the Circuit Court of Appeals, Fifth Circuit. The case was taken to the Supreme Court of the United States on writ of error.

The bills of lading acknowledged receipt of the coke from the Central company stated that the coke was "consigned to Order of Tutwiler & Brooks, Mayer, . . . notify Great Western Smelters Corporation," and provided that: "The owner or consignee shall pay the freight and average, if any, . . . and, if required, shall pay the same before delivery." There was no suggestion that Tutwiler & Brooks were insolvent. Whether collection could then have been made from the Smelter Corporation was a matter as to which there was conflicting evidence.

The Supreme Court holds that no act or omission of the carrier (except the running of the statute of limitations) could estop or preclude it from enforcing payment of the full amount by a person liable therefor. "But delivery of goods to a carrier for shipment does not, under the Interstate Commerce Act, impose upon a shipper an absolute obligation to pay the freight charges. The tariff did not provide when or by whom the payment should be made. As to these matters carrier and shipper were left free to contract, subject to the rule which prohibits discrimination." It was therefore for the court to determine what promise, if any, to pay freight charges was, in fact, made by the Central company, and to do this the court looked primarily to the bills of lading. "In this case, the bills of lading acknowledge receipt of the coke from the Central company. But it did not sign them, nor was it described therein as the consignor. There was no clause by which the shipper agrees expressly either to pay the freight charges or to guarantee their payment. The goods received were not declared to be deliverable to the Central company's order. On the contrary, the form of the bills of lading indicated that it was neither the owner nor the person on whose behalf the shipment was being made; and that Tutwiler & Brooks were either the owners or the persons in whose behalf the shipment was being made. On these facts, the trial court was justified in finding that the Central company did not assume the primary obligation to pay the freight charges."

In a footnote at this point of the opinion, in which the cases are specified, it is said that: "In most of the cases in the state courts and the lower federal courts relied upon by the carrier, either the facts on which the shipper was held liable differed materially from those of the case at bar; or, because of the manner in which it was presented, the question of law was different."

"It is urged that, if the Central company was not under a primary obligation to pay the freight charges, it was secondarily liable, because collection from the Smelters Corporation of the balance remaining due had become impossible before the under-

charge was discovered. But the trial judge was not compelled so to find. There was evidence that such collection had not become impossible. Confessedly no effort was made to collect from it. Nor was any effort made to collect from Tutwiler & Brooks. Moreover, if a secondary obligation of the Central company was to be implied from the fact of its causing the coke to be received for transportation, the promise was not necessarily one to pay at any time any freight charges which the carrier might find it impossible to collect from the consignee or his assign. The court might have concluded that it guaranteed merely that the consignee or his assign would accept the shipment. For, under the rule of *Pittsburg, C. C. & St. L. v. Fink*, 250 U. S. 577, if a shipment is accepted, the consignee becomes liable, as a matter of law, for the full amount of the freight charges, whether they are demanded at the time of delivery or not until later. His liability satisfies the requirements of the Interstate Commerce Act." The judgment was affirmed.—*Louisville & Nashville v. Central Iron & Coal Company*. opinion by Justice Brandeis. Decided May 5, 1924.

### No Reparation Under Long and Short Haul Clause Without Proof of Pecuniary Damage

The Supreme Court of the United States, reversing judgments in four actions in the Circuit Court of Appeals, Ninth Circuit, and Minnesota courts, has sustained the former decisions of the Interstate Commerce Commission, holding that a carrier cannot be required to make reparation for infraction of the long and short haul clause, Section 4, of the Interstate Commerce Act, without proof of financial loss to the claimant.

Four actions were brought to recover overcharges on freight said to have been demanded by the Great Northern, the Federal Control Agent and the San Francisco & Portland Steamship Company in violation of the long and short haul clause (Interstate Commerce Act, §4). All the cases involved the same fundamental question of law. The essential charge was that the carrier demanded and received greater compensation for transporting freight for a shorter distance than its published rate for transporting like property for a longer distance over the same route and in the same direction. Judgments for the plaintiffs were affirmed by the Circuit Court of Appeals, Ninth Circuit, and the Minnesota Supreme Court, and the railroads appealed to the United States Supreme Court.

One case, *Davis v. Portland Seed Company*, was selected by the United States Supreme Court as typical of the whole. A car of alfalfa was received by the Atchison at Roswell, N. M., for transportation to Walla Walla, Wash., by way of Denver. The consignee paid the scheduled rates from Roswell, \$2.44 per 100 lb. The Atchison's published schedule at that time, January, 1919, showed \$1.515 per 100 pounds from Pecos to Walla Walla, through Roswell and Denver. The consignee demanded judgment for the excess above the Pecos rate, as an overcharge illegally exacted and recoverable as money had and received.

The plaintiffs insisted that under the long and short haul clause the lower published rate from Pecos became the maximum which the carrier could charge for the shipment from Roswell, notwithstanding the higher published rate therefor; that the sum charged above the Pecos rate amounted to an illegal exaction.

Relying on *Pennsylvania Railroad Company v. International Coal Company*, 230 U. S. 184, the Interstate Commerce Commission has definitely rejected the plaintiff's theory by many opinions, and holds that while a charge prohibited by the long and short haul clause may subject the carrier to prosecution by the government, it does not afford adequate basis for reparation where there is no other proof of pecuniary damage.

It was insisted that under section 4 it was unlawful to charge compensation above the published Pecos rate for the transportation from Roswell to Walla Walla. Therefore, the published Roswell rate being unlawful, non-existent indeed, the Pecos rate became the only one in force. *United States v. Louisville & Nashville*, 235, U. S., 314, 322, 323, was relied upon; and it was said that the opinion there interprets the long and short haul clause as "absolutely prohibiting the existence" of higher rates for shorter hauls. The United States Supreme Court says: "Read with the real issue in mind, the opinion gives no support to respondent's argument. The Interstate Commerce Commission held that certain reshipping privileges granted to Nashville, but refused to Atlanta, amounted to unreasonable preference under section 3, and ordered the carrier to discontinue them. The Commerce Court



restrained the enforcement of this order. This court declared that the challenged privileges were prohibited by the long and short haul clause; that section 4 controlled the right to grant them; that they had not been authorized by the commission; and therefore it would be unlawful to continue them. Accordingly the order to desist was approved and the decree of the Commerce Court reversed. No disagreement with Pennsylvania Railroad Company v. International Coal Company was suggested."

In the present cases the plaintiff did not ask injunction against illegal rates, but sought to secure something for itself without proof of pecuniary loss consequent upon the unlawful act. The Supreme Court points out that a similar effort failed in Pennsylvania Railroad Company v. International Coal Company. There the International company shipped 40,000 tons of coal from the Clearfield district, paying full tariff rates. The carrier had allowed other shippers from and to the same places at the same time rebates ranging from five to thirty-five cents a ton. Without alleging or proving pecuniary injury resulting to itself from this unlawful action, the company unsuccessfully sought to recover like concessions upon all its shipments.

Southern Pacific Company v. Darnell-Taenzer Company, 245, U. S., 531, the Supreme Court says, presents no conflict with Pennsylvania v. International Coal Company. There the shipper paid a published rate which the commission afterwards found to be unreasonable. The Supreme Court held he could recover, as the proximate damage of the unlawful demand, the excess above the rate which the commission had declared to be reasonable. "The opinion went no further. Certainly it did not suggest that the unreasonable rate was non-existent for any purpose because forbidden by law."

The Supreme Court holds that the evidence shows that the carrier violated the statute by publishing the lower rate for the longer haul without permission, and, prima facie at least, incurred the penalties of section 10 of the act. Also, it became "liable to the person or persons injured thereby for the full amount of damages sustained in consequence of \* \* \* such violation," together with reasonable counsel fees, as provided by section 8. But mere publication of the forbidden lower rate did not wholly efface the higher intermediate one from the schedule and substitute for all purposes the lower one, as a supplement might have done, without regard to the reasonableness or unreasonableness of either.

"With special knowledge of rate schedules and relying on Pennsylvania v. International Coal Company," the Supreme Court opinion reads: "the Interstate Commerce Commission for ten years has required proof of financial loss as a prerequisite to reparation for infractions of the Fourth Section. The rule is firmly established. Congress has not shown disapproval. The Transportation Act, 1920, with evident purpose to conserve the carriers' revenues, added the following to the proviso which gives power to exempt from the long and short haul clause: 'But in exercising the authority conferred upon it in this proviso the commission shall not permit the establishment of any charge to or from the more distant point that is not reasonably compensatory for the service performed.'"

The rule adopted by the commission follows the logic of the opinion relied upon and can be readily applied. The contrary view would not harmonize with other provisions of the act; and, put into practice, would produce unfortunate consequences.

"The statute requires rigid observance of the tariff, without regard to the inherent lawfulness of the rates specified. It commanded adherence to the published rate from Roswell; section 6 forbade any other charge. Observance of the lower rate from Pecos, put in without authorization, might have been forbidden, as pointed out in United States v. L. & N., supra; but it would be going too far to hold, as respondent insists, that the unauthorized publication established the lower rate as the maximum permissible charge from the intermediate point—the only rate therefrom which could be demanded.

"If a lower rate published without authority becomes the maximum which may be charged from any intermediate point, mistakes in schedules (and they are inevitable) may become disastrous. Suppose the rate from an obscure point in Maine to San Francisco via Boston, New York and Chicago should be printed at \$15, instead of \$150, and the error remain undiscovered for many months, could all who had paid more than \$15 for passage along that route recover the excess without proof of pecuniary loss?"

The judgments below were reversed and the causes remanded. Davis v. Portland Seed Company. Decided April 7, 1924. Opinion by Justice McReynolds. Justice Brandeis dissented.

## Labor News

The enginemen, firemen and hostlers of the Boston & Maine have been granted an increase in wages of about 5 per cent, to take effect from May 9. It is said that the number of men affected by this increase is about 2,000.

Ben W. Hooper, chairman of the United States Railroad Labor Board, was re-elected to that office to serve during the ensuing year at the annual election on May 12. G. W. W. Hanger, vice-chairman, was also re-elected. Mr. Hooper was appointed a member of the Labor Board in 1921. He was elected vice-chairman of the board in that year and was elected chairman in 1922. He has served continuously as chairman since that time. Prior to his appointment to the Labor Board, Mr. Hooper had been governor of Tennessee for four years.

### Clerks to Ask Return to Peak Wages

A return to the high wages of 1920 for all clerical employees represented by the Brotherhood of Railway and Steamship Clerks, Freight Handlers, Express and Station Employees, is to be demanded of railways throughout the United States this year. A uniform scale of wages throughout the country also will be sought in the coming campaign, according to reports from headquarters of the clerks' brotherhood. The clerks will base their demands upon the contention that the cost of living has increased instead of decreased, as was anticipated when wage reductions in 1921 and 1922 were ordered by the Railroad Labor Board. The few railways which have already settled with the clerks have, in general, granted increases averaging about five per cent, or less than half of what the clerical employees propose now to ask.

### Western Enginemen's Dispute Goes to Labor Board

The dispute between the Western railways and their enginemen over demands for wage increases and changes in working rules was submitted to the Railroad Labor Board by W. M. Jeffers, chairman of the committee of railway representatives, when the officers of the Brotherhood of Locomotive Engineers and of the firemen's brotherhood (representing its members who are enginemen) walked out of the conference on May 12. The conference, which had been in progress for three weeks, was then suddenly terminated as a result of a deadlock over the railways' proposal of changes in working rules. The Labor Board has assumed jurisdiction and will begin an investigation at once.

A statement issued by the conference committee of managers indicates the reasons why the parties in conference were unable to agree. The representatives of the two brotherhoods had asked the Western lines to grant the so-called New York Central increases in western territory. The conference committee of managers, which represents railways having 85 per cent of the mileage in western territory, had proposed, when the conferences began, that not only the wage increase asked for but also certain rules governing working conditions should be included in the subjects of negotiation. The managers' committee proposed that, first, certain changes in rules which were regarded as unduly restrictive and unreasonably burdensome should be modified in the present conference, and, second, that certain other rules should be referred back to individual lines and their employees, to negotiate fair rules based upon certain principles to be agreed to in conference, with the provision that in the event of failure to agree upon these rules they should be referred to a commission, consisting of two representatives of the labor organizations and two representatives of the managements, with power to dispose of such disagreements upon a fair basis.

"The representatives of the labor organizations declined to agree to the adoption of certain rules on several western roads which are standard and in effect on practically all other roads in the United States. They also declined to agree on any principles to be adopted in conference as a basis for negotiation on individual roads. Any differences which might arise between individual lines and their own employees would be referred to the above-mentioned commission of four members on which the railways and the labor unions concerned would be equally represented. It will be seen

that in disposing of such disagreements the employees, through their representatives, would have an equal vote with the representatives of the railroads. It would seem that negotiations are an almost hopeless task if representatives of the organizations are not willing to act as judges on behalf of their members. We may here see a motive that lies behind the attempt to change the transportation act. The proposed change in the law would leave the labor organizations free again to use the power of strike to enforce demands upon questions on which they are unwilling to have their own representatives act as judges.

"In view of the present financial condition of the Western lines, the members of the committee of managers did not feel that they would be justified in agreeing to an advance in wages unless it were to be accompanied by agreements and arrangements for relief from those working rules which are unduly burdensome because in many cases resulting in men being paid excessive amounts for which they do not render adequate service.

"The advance in wages asked for would have averaged about 6½ per cent for all classes of employees represented by the organizations concerned. The Western lines have never, since the tentative valuation of their properties by the Interstate Commerce Commission, earned anywhere near the net return on the valuation that the commission held would be fair. In the early part of this year business showed some improvement, but recently the roads have been suffering severely from a decline in freight traffic. This has correspondingly reduced their earnings, until at present many western lines are not earning their fixed charges. In spite of these facts they are confronted with insistent demands for reductions of freight rates, especially on farm products, and by a threat of legislation by Congress to bring about such reductions. Unless conditions improve, the Western lines, instead of being able to stand advances in wages, or even to continue the present wage scales, may soon be forced to take steps to bring about reductions of wages. In the face of all these facts, the refusal of the representatives of the engine service employees to agree even to negotiations looking to changes in working rules that are unreasonably expensive in their operation, has rendered it wholly impossible to reach any settlement with them."



Ewing Galloway

On the Palestine Railway Near Jerusalem

## Foreign Railway News

### Collision in Switzerland Kills Thirty

On April 23 at Bellinzona, Switzerland, at 2:20 a. m., a Basel-St. Gothard-Milan night express train collided head-on with a Milan-Basel express train resulting in the death of from 20 to 30 persons. Each train was drawn by two locomotives.

All the passenger cars were of wooden construction and some of them were lighted by gas which ignited the wreckage and



P. & A.

Scene of Disastrous Collision in Switzerland

burned many who were entrapped—hence the difficulty of stating the exact number who lost their lives. The accident was said to have been due to a mistake made by a switchman in throwing a switch. One of the passengers killed was Karl Helfferich, former Minister of Finance of Germany.

### Progress on Spanish Railways

The lack of railroad development in the past few years is keenly felt in Spain, particularly since her products, if facilities for shipping were adequate, would find a ready market in other European countries where production has decreased since the war, according to Trade Commissioner Burke at Madrid. A new interest has been awakened through the establishment, by royal decree, of a commission to study the railroad problems of the country. The first meeting of this commission was held in the early part of March to discuss the methods employed in other countries for the solution of similar difficulties.

In the six years from 1918 to 1923, inclusive, only about 247 miles of road have been opened to service, of which 32 miles were opened in 1923. These 32 miles comprise 25 miles of narrow-gage lines and 7 miles of electric line. Construction during this period has lengthened the total mileage of the national system from 9,718 to 9,965. Nine new lines have been authorized, but only six of these are being actively carried forward. Three of the six lines are under government supervision, and the others are being built by private companies. The government has also authorized the electrification of the railroad between Vitoria and Estella, and bids for this work may be called for shortly.

The new Trans-Pyreneic Railway, which is to be electrified, is the shortest route between North Europe and Gibraltar. The present line between Irun and Alsasua is 67 miles, whereas the new line is only half that distance. Construction is under way, and it is hoped the line will be opened during the current year. It is backed by the agriculturalists of that region, including the wine growers of Rioja and the fruit growers of Valencia.

From the data at hand, the income of the railroads for the year



1923 is estimated at \$98,853,084 (exchange rate of the peseta equals \$0.1445). With the exception of the Oesta de España and the Zafr a Huelva lines, whose collections show a deficit, there was a gain of \$4,769,964 in the yearly income. These figures include only the principal lines, or about 70 per cent of the total mileage.

### Famous English Artist Designs Posters for Railway

Sir William Orpen, member of the Royal Academy and one of the foremost painters in the United Kingdom, has recently prepared the poster shown in the accompanying illustration for the London, Midland & Scottish Railway.

The painting was made from life at Euston station, London, and portrays a locomotive engineman at the throttle and the fireman attending to the fire. The engineman's side of the cab



A British Engine Crew on "the Night Mail"

is the left in England because trains are operated on the left-hand track and signals are so placed.

The poster is painted in vivid colors and is being so reproduced for display on the "hoardings" (i. e., billboards) throughout the kingdom. The commissioning of artists of recognized standing to prepare posters is an established policy of two or three British railways and it has resulted in bringing railway poster art up to an exceptionally high standard and in attracting widespread attention to each new one that appears.

### The British Railways in 1923

The year 1923, the first under the recent railway consolidation, brought returns on capital investment to the railways of Great Britain as follows: London, Midland & Scottish, 3.72 per cent; London & North Eastern, 3.6; Great Western, 4.14; and Southern, 3.45. The London, Midland & Scottish paid a dividend of 7 per cent on its ordinary stock and the Great Western 8 per cent. The London & North Eastern paid 5 per cent on its preferred ordinary and 2½ on its deferred. The Southern paid a similar dividend on its preferred and 3½ on its deferred. To pay these dividends, however, the roads had to make the following appropriations from reserve: L. M. S., £200,000; L. N. E., £509,224; G. W., £152,969; Southern, £246,613. Taking the companies in the same order, operating ratios were 81.33, 81.81, 81.09 and 80.66.

The route mileage of the companies is as follows: L. M. S., 6,753; L. N. E., 6,307; G. W., 3,647; Southern, 2,134—a total of 18,841 miles. Taken in the same order, the companies' investment per mile of line is as follows: £45,021; £36,461; £32,265; £52,731—a total capitalization of almost £1,100,000,000—of which £140,000, approximately one-eighth, represents investment for other than railway purposes. Gross receipts from railway operations of all the companies totaled approximately £200,000,000. Other receipts increased this total by some £13,500,000. Of their total railway receipts, those from passenger train service bore the following ratios to gross: L. M. S., 41.37 per cent; L. N. E., 37.81; G. W., 43.13; Southern, 73.87.

Passengers carried, exclusive of season ticket holders, totaled 934,598,429, and revenue therefrom totaled £58,649,001. Season tickets, of which 826,862 were sold, brought an additional revenue

of £10,202,830. The average receipts per passenger, exclusive of season ticket holders, varied from 1s. 2½d. on the London & North Eastern to 1s. 4.07d. on the Great Western.

On the London, Midland & Scottish, which handled more merchandise than any other carrier, the receipts per ton from this class of traffic averaged 16s. 2½d., of which collection and delivery cost on the average 1s. 11¼d. Receipts from merchandise were 50 per cent of all freight train receipts on this line. On the London & North Eastern, the largest carrier of coal and other fuel, receipts per ton on such traffic averaged 2s. 10½d.

### Proposed Railway Construction in Spain

Some 12 months or so ago a group of American and English capitalists in conjunction with powerful Spanish banking interests and the Sociedad Espanola de Industrias y Traccion Electrica, formed a company capitalized at 500,000,000 pesetas to develop railroad construction throughout the Iberian peninsula. At the time it was proposed to commence operations at once on several important projects, starting with an electric railroad between Madrid and Valencia—a distance of approximately 200 miles.

However, largely owing to the political situation which has almost intermittently clouded the atmosphere ever since the idea took practical shape, the matter has until recently laid practically dormant. The advent of the Military Directorate has, however, brought about a complete change of conditions and the scheme has lately been revived in somewhat modified yet considerably enlarged form.

The present proposition submitted for the consideration of the Directory by the Sociedad Electrica and the Anglo-American syndicate embraces a comprehensive program. It offers to provide the capital for approximately 1,550 miles of new railways and also to construct the lines. The before-mentioned direct line from Madrid to Valencia again comes into the picture, as do the Algeciras line direct to the French frontier, another line from Requena to Baeza, and the Alpujarras strategic line.

The capitalists request the Spanish government to guarantee both interest and sinking fund of an issue of 3,000,000,000 pesetas (normally \$600,000,000) in 5 per cent bonds. Conditionally upon this request being granted, the company undertakes within 30 days to have 80,000 workmen engaged and, further, to give employment to 2,000 army officers or ex-officers in the technical branches of the offices and works. The time required for the execution of the contract is five years, and, upon completion of the work, the line is to be transferred by the company to the state. In return, the government is to grant a concession to the company to operate the railways, for which privilege it is to pay the government a royalty of the same amount as the state annuity granted as a guarantee of the interest and sinking fund.

From the government point of view, the proposition seems an exceedingly favorable one, since they would come into possession of 1,550 miles of new lines, which are urgently wanted, without being called upon to find the capital, the only outlay being the annual interest payable during the contract—an amount which should be readily recouped as the result of a few years' operations. The company is looking for its recompense from the industries which would follow the new lines. The projected routes would open up wonderfully fertile agricultural areas and mining districts previously without means of communication, while the installation of a hydro-electric plant, which is contemplated by the company, would provide the necessary power for a large irrigation scheme and for industry generally.

### Japan Notes—Malicious Interference with Trains

TOKIO.

The recent decision of the Japanese government to change its railway construction policy and to encourage the construction of private lines with the grant of bounties or subsidies has proved a strong incentive to private enterprise. In January applications for 34 lines were lodged with the Department of Railways. The aggregate number of applications in February is stated to have much exceeded that number. According to Mr. Okada, Director of the Superintendence Bureau in the department, the total mileage of private railways under construction at present is 975 miles. The mileage of railways the charters for which have already been granted is estimated at 2,154 miles. Other applications, estimated to total 1,660 miles, are pending.

To finance these enterprises capital is being called for in the

domestic money market, often exceeding 30,000,000 yen per month. More than 800,000,000 yen will be required to complete the construction of the lines contemplated. Before the quake of 1923 attempts were made by some enterprisers to raise capital either in London or Wall street. They were on the point of succeeding in securing foreign financial help, but they eventually failed. Their attention is now pinned to the domestic market which is under pressure brought to bear on it by the increasing magnitude of import business but which can still afford some money for safe undertakings. Opinion obtains among railway enterprisers here that when the credit situation gets easier and renders the raising of capital less difficult there will be a railway construction boom side by side with one in electrical development.

The Department of Railways which has just succeeded in connecting the Kobe-Shimonoseki main line with the trunk line along the coast on the Tsushima strait at Ogori, near Shimonoseki, is finishing the trunk line along the coast of the Sea of Japan. At present a section of several miles in Niigata prefecture is being laid. In June when the section is finished all the districts along the Sea of Japan will have their railways connected at different points with the trunk lines traversing the main island of Japan. One can then travel by rail all round Japan's main island. The only drawback is that some districts are snow-bound for the entire winter season and unless an immense force of men and machinery is employed traffic is stopped. Recently the Department of Railways imported American-made snow removing machines and made experiments in their operation on the Northern lines. When the trunk line in question is completed, more of them will be required.

The Department of Railways is expediting the importation and application of electric headlights for locomotives as one of the measures to prevent derailments caused by malicious persons. These have now changed their tactics. Instead of at night, they now try to overturn or stop trains in daytime. One of their recent feats is to station school children on tracks, instructing them not to run away if enginemen merely sound their whistles but to hide themselves as soon as trains are stopped. Another method is to tamper with automatic signals. Lately the latter mischief led to the overturning of an electric train which killed a motorman and wounded several passengers. The railway authorities are considerably worried over this mischief which they attribute to the example set by "slapstick" motion pictures and they propose to insert some lessons on railways in elementary school text books.

### China Notes—Political and Military Intrigue

PEKING.

The proposal by certain American creditors of the Peking-Suiyuan Railway to consolidate and fund the indebtedness of the line has not been accepted by the responsible officials. As a temporizing measure the management has indicated that it might consolidate certain of the debts due to native creditors and secured from them additional advances with which to carry on current construction and betterments while the terms of a possible general consolidation loan agreement are being negotiated. But in such a case the native creditors must be given a preferred position in that 18 per cent interest will be given them and their principal will be repaid in five annual installments before any refunding of foreign indebtedness is undertaken. In fact, it now transpires that although the revenues of the line in November and December aggregated more than \$2,000,000, an advance of \$1,000,000 was secured from native bankers. In the meantime the payments on the car-revenue plan which had been put into operation to the benefit of one American creditor have been suspended and the management has stated that it has no intention of resuming them so long as the other creditors hold that such payments constitute a discrimination as between creditors.

After insistent representations by the British Legation it appears that the assailants of Traffic Inspector Bessel were placed under arrest by the Chinese military authorities. The court martial sentenced the two soldiers who committed the assault to imprisonment for two years and the colonel who ordered the assault to imprisonment for eight months. It happens, however, that this colonel is in the good graces of the President, and his sentence was later commuted to twenty-eight days' imprisonment to begin on the day when he took to his bed as a result of a slight indisposition. When this news leaked out and was reported to the British Home Office, the new Labor government, which had been expected to be liberal towards China, responded by demanding a retrial of the offenders with two British observers to be present

at the trial. So far the reply of the Chinese government has not been made public. In the meantime Bessel has had to undergo an operation, from which reactions appear to be favorable and he will be able to depart on the home leave which has been granted him within a few weeks.

The Japanese government has entered a formal protest against the diversion of revenue funds from the Shantung Railway for purposes of upkeep of the Chinese navy now at anchor in the harbor of Tsing Tau. It is a coincidence also that a portion of the Japanese fleet has just visited the port. The general situation has so brought the affairs of this line to the fore that the Ministry of Communications has appointed a commission of five consisting of a former minister, the American adviser on accounting and finance, the Chinese traffic manager of the Tientsin-Pukow line, the Chinese assistant locomotive superintendent of the Peking-Mukden line and the British assistant to the general manager of the Shanghai-Nanking line to investigate the possible developments of the line and to propose such a program of improvements and adjustments as will make possible the earliest redemption of the treasury certificates now held against the line by the Japanese government.

Extra precautions are now being taken on the Tientsin-Pukow line against another possible attack upon the "Blue Express." It transpires that the reported execution of Sun Mei Yao for contemplated mutiny was in fact a treacherous murder with an attendant butchery of some ninety of his command instigated by a jealous officer of the regular army. The remainder of Sun's regiment fled with their arms to the old rendezvous on Paotzoukou, where they have elected Sun's younger brother to be their chief. The track tools from one of the section gangs have been stolen so an indication of their intention has been given. However, provincial troops are moving against them. The "Blue Express" carries a guard of fifty soldiers armed with rifles and machine guns. The baggage car has been fitted with extra armor and two searchlights have been installed in such a manner that a beam can be thrown from both sides of the train over an arc of 180 degrees.

The report given in these notes two months ago concerning the contract for the construction by a British firm of a rail line from Tientsin into Manchuria appears to have been correct as far as it went. The line into Manchuria is undoubtedly a local military gesture and while the movements of individuals indicates that some negotiations are under way, the Ministry of Communications has made a public statement that no contract has been recognized by it. The interest in that direction also serves to attract attention away from negotiations between the same parties for the completion of the line between Shihkiachuang on the Peking-Hankow line and Tsangchow on the Tientsin-Pukow line. The earthwork for this line was completed in 1921 by famine relief labor. A proposed loan of £1,500,000 would supply bridges, rail, ties and accessories together with a small amount of rolling stock. The only issue now remaining between the Ministry and the contractor, so it is said, is concerning the control of purchases. The Ministry contends for open tenders. The financiers naturally are looking to the benefits to home manufactures, their position being that of lenders of materials rather than investors looking for an interest return purely.

An interesting development of the past week is the appearance of advertisements in the Peking newspapers of invitations to tender for rail and ties sufficient for nearly fifty miles of track and shop machinery for the "Mukden-Shanhaikuan Railway Administration." The advertiser is no other than the Chang Tso-lin management of the seized portion of the Peking-Mukden line. It indicates the contemplated permanency of the status quo for the shop machinery when purchased will be installed in the Koupangtse workshops and will enlarge them sufficiently to permit of the erection of cars and the general overhaul of locomotives. A paragraph in the advertisement promises protection to bidders against any attempted "squeeze" on the part of the railway officials.

The Peking-Mukden line is making arrangements for the removal of the Shuimen enginehouse at Peking to a location near the Yuntingmen, where terminal facilities will be sufficiently enlarged so as to permit of a transfer of all terminal work from Fengtai to Peking.

The Peking-Hankow line is installing its own electric light plant to serve the Peking terminals. The city plant has been so regularly outgrown of late that every two or three years the railway has found itself almost in darkness.

The Shantung Railway is about to call for tenders for 80 freight cars of 40 tons' capacity.



## Equipment and Supplies

### Locomotives

THE CUBA RAILROAD is inquiring for four Consolidation type locomotives.

THE SEABOARD AIR LINE is now inquiring for 10 Mountain type locomotives.

THE GREAT WESTERN has ordered 1 Decapod type locomotive from the Baldwin Locomotive Works.

THE NORFOLK & WESTERN, reported in the *Railway Age* of May 10 as having renewed its inquiry for 10 locomotive tenders, has bought this equipment from the American Locomotive Company.

### Freight Cars

THE CHESAPEAKE & OHIO is now inquiring for 100 caboose cars.

JOSEPH WADOWINSKI, Berlin, Germany, is inquiring for 200 tank cars.

THE VIRGINIAN RAILWAY has ordered 10 underframes for caboose cars from the Virginia Bridge & Iron Co.

THE CARNEGIE STEEL COMPANY has ordered 30 all-steel quadruple hopper cars of 70 tons' capacity, from the Pressed Steel Car Company.

THE WESTERN FRUIT EXPRESS, reported in the *Railway Age* of March 22 as inquiring for 1,000 underframes, has ordered this equipment from the American Car & Foundry Co.

### Passenger Cars

BOSTON & ALBANY.—See New York Central.

PITTSBURGH & LAKE ERIE.—See New York Central.

THE NORTH WESTERN OF BRAZIL is inquiring for 3 first class coaches and 3 second class coaches, 44 ft. long.

THE NEW YORK CENTRAL has ordered one dining car from the Pullman Company for the Pittsburgh & Lake Erie.

THE WARASH is inquiring for 10 baggage cars, two dining cars, five chair cars and three combination passenger and baggage cars.

THE CHESAPEAKE & OHIO, reported in the *Railway Age* of March 29 as inquiring for 4 all-steel dining cars, has ordered this equipment from the Pullman Company.

THE NEW YORK CENTRAL, reported in the *Railway Age* of May 3 as inquiring for 25 suburban coaches for the Boston & Albany, has ordered 50 all-steel suburban coaches from the Osgood-Bradley Car Company.

THE NASHVILLE, CHATTANOOGA & ST. LOUIS, reported in the *Railway Age* of April 19 as inquiring for 4 baggage cars, 3 passenger cars and 1 dining car, has ordered 4 baggage cars from

the American Car & Foundry Co., and 3 coaches from the Pullman Company.

### Iron and Steel

THE BALTIMORE & OHIO is inquiring for 5,000 tons of rails.

THE NEW YORK CENTRAL will receive bids until 12 o'clock noon, May 28, for structural steel for bridges.

THE ILLINOIS CENTRAL has ordered 355 tons of structural steel for alterations and additions to its outbound freight house at Memphis, Tenn., from the Virginia Bridge & Iron Co.

### Machinery and Tools

THE ILLINOIS CAR & MANUFACTURING Co. has placed an order for 2 axle lathes.

THE INTERNATIONAL RAILWAY COMPANY has placed an order for a 200-ton wheel press.

THE CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS has placed orders for 2, 5-ft. radial drills and 1 axle lathe.

THE OHIO LOCOMOTIVE CRANE COMPANY, Bucyrus, Ohio, has sold a 25-ton locomotive crane to the Consumers Power Company, Jackson, Mich., and a 20-ton crane to the McNichol Paving & Construction Co., Philadelphia, Pa.

### Track Specialties

THE SOUTHERN PACIFIC is expected to place an order for 12,000 kegs of spikes and bolts this week.

THE CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS is expected to place an order for 1,000 tons of tie plates this week.

### Signaling

THE CHICAGO, MILWAUKEE & ST. PAUL has awarded a contract to the Union Switch & Signal Company for all material necessary for the installation of the Union two-speed continuous inductive automatic train control system on 110 miles of double track main line between Bridge Switch, Minn., and Hastings. This contract includes train control equipment for 70 locomotives.

SINCE the acquisition of the Canadian National in 1917 the Canadian government has advanced in cash \$459,653,320 up to March 31 this year. In addition to this bonds to the value of \$189,293,000 have been guaranteed by the government in addition to guaranteeing interest on Grand Trunk securities worth \$216,207,141. The amounts are made up as follows: To the Canadian Northern, \$292,520.45 in cash and its bonds guaranteed to the value of \$66,793,000; the Grand Trunk Pacific got \$58,535,481 in cash; the Grand Trunk received \$108,597,381 in cash and its bonds guaranteed to the value of \$50,000,000. The interest on the \$216,207,141 worth of other bonds is also guaranteed. In the last fiscal year Canadian National bond issues totaling \$72,500,000 were guaranteed. The sum of cash advances and bonds guaranteed is \$648,948,320, not including the Grand Trunk bonds on which only the interest is guaranteed.

FREIGHT CAR REPAIR SITUATION

Date	No. freight cars on line	Cars awaiting repairs			Per cent of cars awaiting repairs	Month	Cars repaired		
		Heavy	Light	Total			Heavy	Light	Total
1923									
January 1	2,264,593	164,041	51,970	216,011	9.5				
April 1	2,296,997	154,302	52,010	206,312	9.0				
July 1	2,260,532	146,299	44,112	190,411	8.4				
October 1	2,270,840	118,563	32,769	151,332	6.7				
November 1	2,263,099	116,084	34,540	150,624	6.6				
December 1	2,270,405	116,697	38,929	155,626	6.8				
1924									
January 1	2,279,363	118,653	39,522	158,175	6.9				
February 1	2,269,230	115,831	45,738	161,569	7.1				
March 1	2,262,254	119,505	49,277	168,782	7.5				
April 1	2,274,756	125,932	46,815	172,747	7.6				
						June	121,077	2,451,758	2,572,835
						September	114,064	2,335,161	2,449,225
						October	117,254	2,444,118	2,561,372
						November	104,761	2,214,617	2,319,378
						December	87,758	2,073,280	2,161,038
						January	76,704	2,083,583	2,160,287
						February	70,056	2,134,781	2,204,837
						March	77,365	2,213,158	2,290,523

## Supply Trade News

The National Industrial Conference Board has removed its offices from 10 East Thirty-ninth street to 247 Park avenue at Forty-sixth street, New York City.

The U. S. Ball Bearing Manufacturing Company, Chicago, has changed its name to the Strom Ball Bearing Manufacturing Company. There is no change of personnel.

The Garlock Packing Company, Palmyra, N. Y., has moved its Chicago district sales office and warehouse to larger quarters in the Otis Elevator Company building at 600 West Jackson Boulevard, corner of Jefferson street.

**William A. Lake**, who has been connected with the **Pantasote Company**, New York, for the past 15 years, has been appointed sales manager of its railroad and marine department, for the disposition of all Pantasote and Agasote products in those fields. Mr. Lake entered service of the Pantasote Company in its sales department on April 1, 1909, and was given charge of the railroad and the entire marine fields, for the territory composed of the southern, the middle states, a few of the western states and the Island of Cuba. In the marine field Mr. Lake has built up a very large business for the Pantasote Company.



W. A. Lake

The **Railway Service & Supply Company** and the **Transportation Devices Corporation**, Indianapolis, Ind., manufacturers of power reverse gears and cut-off control for locomotives have opened a branch office at 332 S. Michigan avenue, Chicago. **W. C. Miner**, sales manager, has been placed in charge.

The **Buffalo Forge Co.**, Buffalo, N. Y., will open on June 2 a new western office at Seattle, Wash. **Arthur T. Forsyth** of the Buffalo plant will be western representative in charge of the new office. The territory of this office will include the states of Oregon, Idaho, Montana and Washington and the territory of Alaska.

The **Atlas Aluminate Cement Company**, 25 Broadway, New York, a recently formed organization to acquire the Spackman patents covering the manufacture in this country of all high alumina cements, commonly known as French quick-setting cements, is now manufacturing this product at Northampton, Pa., in commercial quantities under the trade name of Lumnite.

The **Continental Railway Supply Company**, Chicago, has purchased the manufacturing and distribution rights for the **Hartman** center plate and side bearings for electric railways from the **Burry Railway Supply Company**. This company also has been appointed representative of the **Mitchell Spring & Manufacturing Company**, Johnstown, Pa., manufacturers of coil and elliptic springs for both steam and electric equipment, in the central, central western and southwestern states.

The **Mitchell Spring & Manufacturing Company**, Johnstown, Pa., has taken over the business of the **W. G. Mitchell Spring Works**, manufacturers of coil and elliptic springs for steam and electric railway equipment. **Fred A. Meckert**, general manager of the Ft. Pitt Spring & Manufacturing Company, is

president, **Joseph Irwin**, formerly superintendent of the Ft. Pitt Spring & Manufacturing Company, is superintendent. **W. G. Mitchell** is vice-president and **L. Harvey Mitchell** is treasurer.

Work has been started on a new building seven stories high to include about 180,000 square feet for the **Western Electric Company** at Allegheny avenue, Clearfield, Ormes and B streets, Philadelphia, Pa. The new building will be used as a telephone distributing house, and it will include office, warehouse and shop space. The building is being erected by a realty corporation, and upon its completion will be turned over to the Western Electric Company on a twenty-year lease. The entire project will cost about \$900,000.

## Obituary

**Fred R. Cooper**, general sales manager of the **Gold Car Heating & Lighting Co.**, Brooklyn, N. Y., died at his home, Northbrook courts, Washington, D. C., on May 10, after a short illness.

**Edward F. Terry**, founder in 1895, with **Frederick Tench**, of the **Terry & Tench Company**, engineers and contractors, died on May 12 at his home in Riverdale, N. Y., of heart disease, at the age of 67.

**John Wesly Hathaway**, assistant vice-president of the **Union Draft Gear Company**, with headquarters at Chicago, whose death at Naperville, Ill., on March 23 was announced in the *Railway Age* of May 10, was born in 1870, in Missouri, where he attended the public schools. In his early life he was employed as a carman and a foreman on the **Missouri Pacific**, the **Denver & Rio Grande**, the **Colorado Southern** and other western roads. In the early part of 1910 he was general foreman in the car department of the **St. Louis-San Francisco**, with headquarters at Kansas City, Mo., and in the latter part of that year he entered the employ of the **Union Draft Gear Company** in the sales department, which position he held until his death.



J. W. Hathaway

## Trade Publications

**CINDER AND COAL CONVEYORS.**—**William Robertson & Company**, Chicago, has issued a publication devoted to a description of the **Robertson cinder coal conveyors and sand handling equipment**. The description of this equipment, which is comprehensive, in addition to setting forth the advantages of the equipment, covers its installation, operation and maintenance. Full line drawings and photographs are included to show the details of the equipment and its use in service, also figures on actual costs.

**AIR COMPRESSORS.**—Recent literature on air compressing equipment includes three publications of the **Sullivan Machinery Company**, Chicago, as follows: **Bulletin No. 77H**, devoted to the **Sullivan angle compound power driven air compressors**, both belted and direct connected; **Bulletin No. 78B**, devoted to steam and belt driven dry vacuum pumps and **Bulletin No. 77K**, devoted to the belt driven wafer valve air compressors. **Bulletin 77H** is a fifth edition of the publication on the angle compound compressor and presents up-to-date information on this class of equipment, including photographs of the equipment in section and service and complete data on its operation and upkeep, as well as specifications of dimensions and capacities.



## Railway Construction

**CENTRAL OF GEORGIA.**—This company has placed an order with S. F. Bowser & Company, Inc., for oil storage equipment for installation at Columbus, Ga., made up of several large 10,000-gal. rectangular basement tanks for the storage of oil which will be received in tank cars and for quick return special one-gallon pumps which will be installed on the first floor. Six outfits with power agitators for the storage and handling of mixed paints also are included besides several outfits for the storage of lubricating and paint oils.

**CHICAGO & ALTON.**—This company is constructing, with its forces, a steel bridge across the Mackinaw river at Lexington, Ill.

**CHICAGO & NORTH WESTERN.**—This company is calling for bids for the construction of an addition to the freight house at Sterling, Ill.

**FLORIDA EAST COAST.**—This company has awarded to the American Engineering & Construction Company, Miami and Chicago, contracts for grading and pipe culvert work on 21 miles of second main track to be laid at South Jacksonville, Fla., New Smyrna and Fort Pierce.

**GRAND TRUNK WESTERN.**—This company is calling for bids for the construction of an enginehouse and repair shop at Battle Creek, Mich., at an estimated cost of \$800,000.

**INTERNATIONAL-GREAT NORTHERN.**—This company contemplates the remodeling of its passenger station at Taylor, Tex.

**JOPLIN UNION DEPOT.**—This company has awarded a contract to the W. R. McCormick Construction, Joplin, Mo., for the construction of an enginehouse at Joplin, Mo., to cost approximately \$12,000.

**NEW YORK CENTRAL.**—This company has ordered a battery of floor tanks with pumps for handling lubricating oils at its oil house at Cleveland, Ohio, from S. F. Bowser & Company, Inc., and has placed an order for the equipping of two oil houses at Selkirk, N. Y., including a 20,000-gal. and a 12,000-gal. capacity cylindrical tank installed out of doors for gasoline and kerosene, large rectangular tanks installed in the basement running from 4,000 to 10,000 gal. capacity each and having standard indicators on the first floor, one-gallon and five-gallon hand operated pumps on the first floor and several outfits with power agitators for the storage and handling of mixed paints.

**READING.**—This company has awarded a contract to the Robert E. Lamb Company, Philadelphia, for the furnishing and erection of an addition to the office of its motive power department at Sixth and Perry streets, Reading, Pa.

**READING.**—This company has placed an order with S. F. Bowser & Company, Inc., for complete oil storage equipment for installation in a new oil house at Wilmington, Del., including several large basement tanks with one-gallon capacity pumps on the first floor and the necessary accessories for the emptying of barrels.

**SOUTHERN PACIFIC.**—This company, jointly with the St. Louis Southwestern, contemplates the construction of a union passenger station at Corsicana, Tex.

**SOUTHERN PACIFIC.**—This company will rebuild at once its docks and freight sheds at Sacramento, Cal., recently destroyed by fire with a loss of \$250,000.

**ST. LOUIS & HANNIBAL.**—This company will construct a repair yard and storage tracks at Hannibal, Mo.

**WABASH.**—This company contemplates the construction of a freight station and warehouse at Columbia, Mo.

SLEEPING cars for men only are now run by the Pennsylvania on the Gotham Limited, between Chicago and Pittsburgh, and on the Atlantic Express, between Chicago and Columbus, Ohio.

## Railway Financial News

**ALABAMA & VICKSBURG.—Bonds.**—The Interstate Commerce Commission has authorized an issue of \$2,500,000 of first mortgage 5 per cent bonds, to be sold at not less than 94.06.

**ALABAMA GREAT SOUTHERN.—Extra Dividends.**—The directors have declared extra dividends of  $\frac{1}{2}$  of 1 per cent on the common and preferred stocks and the regular semi-annual dividends of  $\frac{3}{4}$  per cent on both classes of stocks. The extra and regular common dividends are payable June 28 to stockholders of record on May 24 and the regular preferred is payable August 16 to stockholders of record on July 12.

**ATCHISON, TOPEKA & SANTA FE.—Acquisition of California Southern.**—This company has applied to the Interstate Commerce Commission for authority to acquire control of the California Southern, which it now leases, by purchase of its capital stock.

**CANADIAN PACIFIC.—New Chairman.**—E. W. Beatty, president of the company, has been elected chairman of the board, succeeding the late Lord Shaughnessy.

**CHESAPEAKE & OHIO.—Bonds.**—The Interstate Commerce Commission has authorized this company to pledge \$487,000 of general mortgage  $4\frac{1}{2}$  per cent bonds and \$12,896,000 of first lien and improvement 5 per cent mortgage bonds as collateral security for a note to the director general of railroads for \$9,200,000.

**CHICAGO, BURLINGTON & QUINCY.—Annual Report.**—This company's annual report for 1923 is reviewed in an article on another page entitled "Narrow Margin Over Burlington Dividends." See also excerpts from annual report on adjacent pages.

**CHICAGO, MILWAUKEE & ST. PAUL.—Annual Report.**—The annual report for the year ended December 31, 1923, shows a net income of \$207,686 as compared with a deficit of \$6,143,168 in 1922. A selection of the principal items in the income account follows:

	1923
Railway operating revenues.....	\$169,628,338
Railway operating expenses.....	134,999,228
Net railway operating revenue.....	34,629,110
Railway tax accruals.....	8,614,180
Railway operating income.....	26,011,818
Net railway operating income.....	20,167,713
Net railway and non-operating income.....	21,878,709
Total deductions.....	21,671,023
Net income.....	207,686

**CHICAGO, ROCK ISLAND & PACIFIC.—Abandonment.**—This company has been authorized by the Interstate Commerce Commission to abandon its Chandler branch, from Guthrie to Chandler, Okla., 34.2 miles.

**COLORADO, WYOMING & EASTERN.—New Company.**—See Northern Colorado & Eastern, item below.

**DULUTH & IRON RANGE.—Annual Report.**—The annual report for the year ended December 31, 1923, shows a net income of \$1,584,962 as compared with \$1,505,183 in 1922. A selection of the principal items in the income account follows:

	1923	1922	Increase or decrease
Operating revenue:			
Ore freight.....	\$5,621,279	\$5,268,396	\$352,883
Miscellaneous freight.....	1,257,175	769,132	488,043
Passenger.....	216,496	210,098	6,398
Total operating revenue.....	7,768,817	6,818,657	950,161
Maintenance of way and structures.....	1,189,548	1,096,678	92,869
Maintenance of equipment.....	1,555,636	1,309,873	245,763
Traffic.....	15,012	14,249	764
Transportation.....	2,429,785	2,004,926	424,859
General.....	257,030	219,863	37,168
Total operating expenses.....	5,448,117	4,648,861	799,255
Net revenue from railway operations.....	2,320,701	2,169,795	150,905
Railway tax accruals.....	609,440	518,424	90,516
Total operating income.....	1,709,953	1,650,869	59,084
Gross income.....	2,212,974	2,130,850	82,124
Total deductions.....	628,012	625,667	2,345
Balance of net income.....	1,584,962	1,505,183	79,779

**FLORIDA WESTERN & NORTHERN.—Bonds Sold.**—Dillon, Read & Co., Ladenburg, Thalmann & Co., Kissel, Kinnicutt & Co. and  
(Continued on page 1240)

# Annual Reports

## Fortieth Annual Report of the Southern Pacific Company and Proprietary Companies—Year Ended December 31, 1923

NEW YORK, N. Y., May 8, 1924.

TO THE STOCKHOLDERS OF THE SOUTHERN PACIFIC COMPANY:  
Your Board of Directors submits this report of the operations and affairs of the Southern Pacific Company and of its Proprietary Companies for the fiscal year ended December 31, 1923.

### INCOME ACCOUNT

SOUTHERN PACIFIC COMPANY AND TRANSPORTATION SYSTEM COMPANIES,  
COMBINED

(Excluding offsetting accounts)

	Year ended December 31, 1923	+Increase —Decrease	Per cent
<b>OPERATING INCOME</b>			
<b>Railway Operating Revenues:</b>			
1. Freight .....	\$199,591,192.30	+\$19,152,240.67	10.61
2. Passenger .....	62,158,875.82	+3,155,325.96	5.35
3. Mail .....	3,864,972.83	+283,218.32	7.91
4. Express .....	7,748,345.26	+94,872.01	1.24
5. All other transportation .....	6,802,888.68	+1,005,243.80	17.34
6. Incidental .....	6,921,629.82	+1,043,210.38	17.75
7. Joint facility—Credit .....	175,771.46	—40,367.60	18.68
8. Joint facility—Debit .....	59,041.35	—8,278.22	16.31
9. Total railway operating revenues .....	\$287,204,634.82	+\$24,685,465.32	9.40
<b>Railway Operating Expenses:</b>			
10. Maintenance of way and structures .....	\$41,235,817.14	+\$4,429,687.89	12.04
11. Maintenance of equipment .....	50,451,491.20	+2,187,422.94	4.53
12. Total maintenance .....	\$91,687,308.34	+\$6,617,110.83	7.78
13. Traffic .....	4,990,768.33	+573,359.33	12.98
14. Transportation .....	98,559,831.08	+6,105,646.35	6.60
15. Miscellaneous operations .....	4,347,543.44	+419,224.62	10.67
16. General .....	8,590,864.92	+267,506.00	3.21
17. Transportation for investment—Credit .....	1,009,728.03	—480,715.43	90.87
18. Total railway operating expenses .....	\$207,166,588.08	+\$13,502,131.70	6.97
19. Net revenue from railway operations .....	\$80,038,046.74	+\$11,183,333.62	16.24
20. Railway tax accruals .....	20,365,327.70	+1,505,971.59	7.99
21. Uncollectible railway revenues .....	87,738.38	—39,854.87	31.24
22. Equipment rents—Net .....	5,555,374.07	+1,739,646.39	45.59
23. Joint facility rents—Net .....	†198,416.89	—27,606.78	16.16
24. Net railway operating income .....	\$54,228,023.48	+\$8,005,177.29	17.32
<b>NONOPERATING INCOME</b>			
31. Income from lease of road .....	\$88,143.60	—\$70,909.07	44.58
32. Income from lease of road—Standard return .....		—1,586.98	....
33. Miscellaneous rent income .....	1,009,652.54	+126,335.22	14.30
34. Miscellaneous nonoperating physical property .....	300,460.71	+18,839.76	6.69
35. Separately operated properties—Profit .....	16,888.75	—13,621.29	44.65
36. Dividend income .....	4,443,170.00	+1,269,125.90	39.98
37. Income from funded securities—Bonds and notes—Affiliated and other companies .....	3,783,773.79	+914,548.46	31.87
38. Income from funded securities—Investment advances—Affiliated companies .....	2,261,596.23	+1,878,777.71	490.77
39. Income from unfunded securities and accounts .....	509,275.94	—365,759.51	41.80
40. Income from sinking and other reserve funds .....	887,572.54	+38,647.11	4.55
42. Miscellaneous income .....	81,049.50	—5,346.34	6.19
43. Total nonoperating income .....	\$13,381,583.60	+\$3,789,050.97	39.50
44. Gross income .....	\$67,609,607.08	+\$11,794,228.26	21.13

### DEDUCTIONS FROM GROSS INCOME

45. Rent for leased roads .....	\$239,107.64	+\$708.58	.30
46. Miscellaneous rents .....	762,002.43	+105,914.89	16.14
47. Miscellaneous tax accruals .....	542,567.21	+64,332.94	13.45
48. Interest on funded debt—Bonds and notes .....	20,140,613.91	—43,944.39	.22
49. Interest on funded debt—Nonnegotiable debt to affiliated companies .....	1,035,107.74	+16,993.42	1.67
50. Interest on unfunded debt .....	97,122.75	—9,981.16	9.32
51. Amortization of discount on funded debt .....	76,562.70	—10,856.03	12.42
52. Maintenance of investment organization .....	23,375.81	—14.12	.06
53. Miscellaneous income charges .....	140,664.62	—281,258.07	66.66
54. Total deductions from gross income .....	\$23,057,124.81	—\$158,103.94	.68
55. Net income .....	\$44,552,482.27	+\$11,952,332.20	36.66
<b>DISPOSITION OF NET INCOME</b>			
56. Income applied to sinking and other reserve funds .....	\$1,165,183.42	+\$37,067.55	3.29
57. Income appropriated for investment in physical property .....	372,348.32	+372,348.32	....
58. Total appropriations .....	\$1,537,531.74	+\$409,415.87	36.29
59. Income balance transferred to credit of profit and loss .....	\$43,014,950.53	+\$11,542,916.33	36.68
60. Per cent. of net income on average amount of outstanding capital stock of Southern Pacific Company:			
(a) Railroad income .....	10.21	+2.38	30.40
(b) Other income .....	2.73	+1.09	66.46
(c) Total .....	12.94	+3.47	36.64

†Credit. †In arriving at the figures for per cent. of railroad income and per cent. of other income on outstanding capital stock (line No. 60), an estimated apportionment of net income was made by allocating to railroad income, as nearly as possible, the items relating solely to that class, and to other income the items relating solely to that class, the remaining items being apportioned between the two classes on an estimated basis.

Conditions affecting railway operations were more nearly normal in 1923 than in any year since 1917, barring the higher costs of labor and materials and the rise in living cost above pre-war standards. A volume of traffic close to the highest in the company's history was handled expeditiously and without substantial equipment shortage, there were no major disturbances incident to labor conditions or other causes, yet the net railway operating income, while comparing satisfactorily with recent years, represents the very modest return of but 4.81 per cent. upon the book investment in road and equipment.

Compared with 1922, average compensation per employee decreased 2.8 per cent., reducing operating expenses by \$4,011,000, lower fuel prices saved \$3,819,000, and lower prices of material caused a reduction of \$777,000, the aggregate effect of changes in labor and material prices being to reduce expenses by \$8,607,000. As against this, however, average revenue per ton mile fell 8.06 per cent., and average revenue per passenger mile decreased 1.93 per cent., reduced rates thus being responsible for a decrease of \$17,549,000 in operating revenue. Taxes increased \$1,505,971.

The volume of freight traffic handled by the railroads of the country was unprecedented. Revenue tons carried one mile by all Class I railroads in the western group increased 15.7 per cent., and by your lines, 20 per cent. over the preceding year. Freight revenue of all Class I railroads in the western group increased 10 per cent. and of your lines 11 per cent. over the preceding year. Failure of freight revenue to increase correspondingly with increase in tonnage was principally due to the application during the entire year 1923 of 10 per cent. reduction of freight rates which became effective July 1, 1922.

Revenue passengers carried one mile by all Class I railroads in the western group increased 6.11 per cent., and by your lines, 7.4 per cent. over the preceding year. Passenger revenue of all Class I railroads in the western

### TRANSPORTATION OPERATIONS

Transportation operations for 1923 compared with the previous six years as follows.

	1923	1922	1921	1920	1919	1918	1917
Operating revenues .....	\$287,204,635	\$262,519,169	\$269,494,365	\$282,269,504	\$239,657,272	\$221,611,206	\$193,971,490
Relative to 1917 (100) .....	148	135	139	146	124	114	100
Actual 1923 compared with 1917 .....	+93,233,145						
Operating expenses .....	207,166,588	193,664,456	212,572,262	242,113,790	188,385,172	163,431,125	120,601,823
Relative to 1917 (100) .....	172	161	176	201	156	136	100
Actual 1923 compared with 1917 .....	+86,564,765						
Operating ratio, per cent. ....	72.13	73.77	78.88	85.77	78.61	73.75	62.18
Net revenue from railway operations .....	80,038,047	68,854,713	56,922,103	40,155,714	51,272,100	58,180,081	73,369,667
Relative to 1917 (100) .....	109	94	78	55	70	79	100
Actual 1923 compared with 1917 .....	+6,668,380						
Railway tax accruals .....	20,365,328	18,859,356	15,539,469	14,792,064	11,911,995	11,105,950	13,792,176
Relative to 1917 (100) .....	148	137	113	107	86	81	100
Actual 1923 compared with 1917 .....	+6,573,152						
Net railway operating income .....	\$4,228,023	46,222,846	35,946,791	21,312,344	39,677,068	50,871,354	62,253,205
Relative to 1917 (100) .....	87	74	58	34	64	82	100
Actual 1923 compared with 1917 .....	—8,025,182						
Traffic units (ton miles plus 3 times passenger miles), thousands .....	21,044,120	18,012,411	17,451,417	22,010,458	20,198,015	20,836,033	20,876,908
Relative to 1917 (100) .....	101	86	84	105	97	100	100



group increased 4.6 per cent., and of your lines, 5.4 per cent. over the preceding year. Failure of passenger revenue to increase correspondingly with the number of passengers carried one mile is due to the ratio of increase being greater in long haul excursion travel than in the number of local short haul passengers—the latter being carried in increasing volume by motor vehicles.

A moderate increase in mail and express revenue resulted from a general improvement of business; and increase in other transportation and incidental revenue, including revenue from excess baggage, dining cars, restaurants, etc., resulted from increased travel.

The Transportation Act, enacted in 1920, provides that rates shall be so adjusted that carriers as a whole or in groups designated by the Interstate Commerce Commission shall earn an aggregate annual net railway operating income equal to a fair return upon the aggregate value of the railway property held for and used in the service of transportation. It provided for an allowance to the carriers for only six months after their relinquishment by the Government of a return equivalent to the rental paid by the Government for the use of the railroads during Federal control. It prescribed as a fair return for the first two years after the enactment of the statute, 5½ per cent. of the aggregate value of the railway property held for and used in the service of transportation, and vested discretionary power in the Interstate Commerce Commission to add thereto a sum not exceeding one half of 1 per cent. The Commission did this and raised the rate to 6 per cent. The Act delegated authority to the Interstate Commerce Commission to prescribe a fair rate of return thereafter, in pursuance of which the rate was fixed at 5½ per cent. per annum. An impression has been fostered that the railroads have been guaranteed a fixed or minimum return. That there is no foundation for this impression is demonstrated by the results since the enactment of the statute. From September 1, 1920, to December 31, 1923, the Class I railroads of the United States (embracing every railroad with gross earnings of one million dollars or more per annum) received a return on the value of their property held for and used in the service of transportation \$1,086,600,000 less than the fair return contemplated by the Transportation Act, and the Class I railroads embraced in the western group received a return on the value of their property held for and used in the service of transportation \$463,400,000 less than the fair return contemplated by the Transportation Act. If the railroads had been guaranteed a fixed or minimum return, \$1,086,600,000 would now be due them to make up the deficit, but neither this amount nor any part of it has been or will be made good.

The rate of annual return upon the readjusted tentative value, based upon book value of investment in road and equipment, was by years as follows:

Years	Southern Pacific Company	All Class I Roads in U. S.	Class I Roads in Western District
1921.....	3.36%	3.33%	3.59%
1922.....	4.29%	4.14%	4.03%
1923.....	4.81%	5.10%	4.57%

In the face of the failure of the carriers to earn even approximately the fair return contemplated by the law, they are continuously hampered in their efforts to do so. To illustrate: they were forced to submit to a general reduction of approximately 10 per cent. in freight rates on July 1, 1922; they were ordered by the Interstate Commerce Commission to sell interchangeable scrip tickets on and after March 1, 1923, at a reduction of 20 per cent. below the normal one way fare, which would have resulted in \$60,000,000 reduction in net revenue per annum, a result fortunately averted by a permanent injunction of the Court; a reduction has recently been ordered in passenger rates to, from, and between points in the states of New Mexico, Arizona, and Nevada which will entail a loss of approximately \$8,000,000 per annum in the net revenue of the railroads operating in the states mentioned, including your lines; bills now under consideration by Congress and a petition now pending before the Interstate Commerce Commission for the elimination of the higher charge made to passengers traveling in Pullman cars threaten a loss of the revenue from this surcharge, which in the case of Class I railroads would amount to about \$33,000,000 per annum; measures are now under consideration by Congress to require a substantial reduction in rates on the products of agriculture, which it is evident the railroads cannot afford.

Furthermore, the western railroads, including your lines, have suffered the diversion of a very large volume of transcontinental freight to the steamship lines operating through the Panama Canal, which carried last year an aggregate of about 6,000,000 tons between the Atlantic and Pacific Coasts of the United States. The rates made by the steamship lines between the two coasts are substantially lower than the railroad rates between intermediate points which are not accessible to steamship lines. To retain or recover their share of this traffic requires rates by railroad approximating those obtainable by steamship. The so-called long and short haul provision of the Interstate Commerce Law prohibits the railroads from making lower rates between these points than are applicable at intermediate points, unless the authority of the Interstate Commerce Commission shall have been obtained. This authority has been so sparingly exercised by the Interstate Commerce Commission that the transcontinental lines thus far have been excluded from competition for the traffic by being denied the privilege of making low enough rates to participate therein; and a measure is now before the United States Senate which contemplates the withdrawal of all authority from the Interstate Commerce Commission to permit the railroads to meet this competition, notwithstanding the policy declared in the Transportation Act that both rail and water transportation shall be fostered and preserved in full vigor. The loss of a very substantial amount of revenue is being and will continue to be sustained unless this discrimination can be averted and authority can be obtained from the Interstate Commerce Commission to participate in this intercoastal traffic.

Maintenance of Way and Structures increased \$4,429,687.89, or 12.04 per cent., the result of increased renewals of rails and fastenings, ballasting and roadway maintenance, due to greater weight of train equipment.

Maintenance of Equipment increased \$2,187,422.94, or 4.53 per cent., allocated principally to repairs of locomotives and passenger cars. Transportation service locomotive mileage increased 12.97 per cent., and total car mileage increased 20.16 per cent. Despite demands placed upon the equipment by the heavier traffic moved, the rolling stock was adequately maintained during the year to the company's standards.

Traffic Expenses increased \$573,359.33, or 12.98 per cent., principally in outside agencies and advertising, in order to obtain our fair share of competitive traffic.

Transportation Expenses increased \$6,105,646.35, or 6.60 per cent. Total transportation service train miles increased 11.12 per cent., passengers carried one mile increased 7.40 per cent., and tons of freight moved one mile increased 21.49 per cent. The number of passengers carried per train increased 2.77 per cent., and the average net tons of freight per train increased 2.34 per cent.

The value of fuel economized in 1923 over 1922 is \$605,015. Close supervision of fuel used by engineers, and improved locomotive design (including superheaters and feed water heaters) have resulted in constant increased efficiency in use of locomotive fuel. Comparing 1923 with 1913, for example, the quantity consumed per 1,000 gross ton miles in passenger service has been reduced from 206.67 to 162.34 pounds, or 21.5 per cent., and in freight

service from 192.83 to 142.56 pounds, or 26 per cent., the annual value of this saving being \$6,552,415.

Miscellaneous Operations increased \$419,224.62, or 10.67 per cent. allocating to dining cars, hotels and restaurants, offset by like increases in revenues from these facilities. General Expenses increased \$267,506.00, or 3.21 per cent.

Railway Tax Accruals increased \$1,505,971.59, or 7.99 per cent. The taxes for the year consumed one-fourth of the total net revenue from railway operations, and approximated the aggregate amount paid as dividends to the owners of the property. The increase in taxes is made up of an increase of \$1,240,900 in Federal income taxes, an increase of \$484,200 in taxes payable to the State of California under the King Tax Law, and a net decrease in charges for other taxes, the result of including in 1922 eighteen months' accrual of taxes payable to the State of Arizona in order to place such accrual on a calendar year basis.

As mentioned on page 10 of the 1921 report the King Tax Law, which became effective July 1, 1921, increased the rate of taxation on gross earnings in California from 5¼ per cent. to 7 per cent. As such tax is excessive when compared with the taxes levied upon property in the State generally, your company and the Atchison, Topeka & Santa Fe Railroad Company instituted suits in equity, in the United States District Court for the Northern Division of California, against the State tax officials to restrain the collection of the tax levied under said law upon the ground that such tax constituted an undue burden upon interstate commerce. At the January, 1924, term of the District Court a decision was rendered denying the relief sought, but proceedings are now under way to take the case to the Supreme Court of the United States, where it is hoped the contention of your company will be sustained.

Pending adjudication of the matter, the tax has been charged against income at the increased rate of 7 per cent., although payments have continued at the old rate of 5¼ per cent. The increased tax from July 1, 1921, the effective date of the King Tax Law, to December 31, 1923, the payment of which has been thus withheld, amounts to \$4,884,178.25; and penalties on amounts so withheld, which also have been charged against income, amount to \$682,700.40. If, as expected, the contention of your company is upheld by the Supreme Court, the liability aggregating \$5,566,878.65 now carried in the accounts will be wiped out and the amount credited to profit and loss.

Expenses incurred during the year on account of Federal valuation of railroads, amounted to \$795,361.73, making the total disbursements on this account from the beginning to the close of the year, \$4,731,032.56.

The increase of \$1,739,646.39 in net equipment rents is accounted for principally by increased car hire payments due to the larger movement of Pacific Fruit Express cars, in which this company owns a half interest and indirectly participates in the rental earnings, although they are not included in Southern Pacific operations.

#### NONOPERATING INCOME

The decrease in the account Income from Lease of Road is due, principally, to the inclusion in that account last year of \$66,942.86 representing rental which accrued prior to January 1, 1922.

The increase in the account Miscellaneous Rent Income is due, principally, to increase in ground rent received from industrial concerns; and to the inclusion in such account, in accordance with requirements of the Interstate Commerce Commission, of the rent received this year under temporary sublease, effective July 1, 1922, for use of Pier 52 at New York, which last year was credited to the account Miscellaneous Rents as an offset against the rental paid for such pier.

The increase in the account Income from Funded Securities—Investment Advances is the result, principally, of crediting to income this year past due interest on investment advances to Affiliated Companies, which was earned during the year, such interest being taken into the income of the Southern Pacific Company only when it has been earned by the Affiliated Companies.

Of the decrease of \$365,759.51 in the account Income from Unfunded Securities and Accounts the sum of \$152,028.39 represents a decrease in interest on Company's own funds used for construction; and the remainder is due, principally, to a decrease in interest received on short term securities which were sold during the year, and to a decrease in interest on demand loans.

#### DEDUCTIONS FROM GROSS INCOME

The increase in the account Miscellaneous Rents is the result, principally, of debiting that account, commencing this year, with an annual charge for amortization of improvements on Oakland Pier terminal property which will revert to the City of Oakland, California, upon the expiration of the Oakland Water front franchise in 1960; and to the inclusion in said account last year of the rental received for Pier 52 at New York, which this year was credited to the account Miscellaneous Rent Income.

The increase in the account Miscellaneous Tax Accruals is caused, principally, by increases in rates and assessed valuations; and by the tax accruals on additional miscellaneous physical property acquired during the year.

The net decrease in the account Interest on Funded Debt—Bonds and Notes is made up of a decrease of \$88,861.06, due to the retirement of \$2,619,110.41 par value of funded debt, less an increase of \$44,916.67, representing the interest accruing during the year on the \$23,100,000 of Equipment Trust Certificates issued during the year.

The decrease in the account Miscellaneous Income Charges is due, principally, to a decrease in this company's proportion of the annual charge for amortization of investment in Associated Pipe Line, the said charge being apportioned among the three owning companies (Associated Oil Company, Pacific Oil Company, and Southern Pacific Company) on basis of use of the pipe line.

The dividends paid for 1923 were appropriated from the profit and loss surplus and therefore do not appear in the income account. Payments for 1923 amounted to \$20,663,094.32, as compared with \$20,663,139.32 for 1922. The figures for this year include \$240.00 and those for last year \$285.00, being dividends on stocks of Transportation System Companies held by the public.

The Southern Pacific Company does not take into its income account interest on advances to Affiliated Companies for the construction and acquisition of new lines until the principal of such advances, with interest, has been repaid either in cash, or in stocks and bonds of such companies, the interest included in the cost of such new lines being the amount authorized to be charged thereto under the regulations of the Interstate Commerce Commission. In the case of all other advances to Affiliated Companies, the interest thereon is taken into the income account of the Southern Pacific Company only when it has been earned by the Affiliated Companies.

#### FUNDED DEBT

On December 1, 1923, to provide for the construction and acquisition of new rolling stock, an equipment trust, known as "Southern Pacific Company Equipment Trust, Series F," was created, and an issue of \$23,100,000, par value, Five Per Cent. Equipment Trust Certificates authorized, all of which were issued during the year. The certificates are dated December 1, 1923, and mature serially in lots of \$2,100,000 on December 1 of each year from 1928 to 1938, both inclusive. In accordance with the terms of the trust all certificates were guaranteed by the Southern Pacific Company.

## EQUIPMENT

To provide for increased requirements and to replace vacated equipment, arrangements were made during the year for the purchase from outside builders, or for the construction at company shops, of rolling stock as follows:

	Ordered from Builders	Built or Building at Company Shops	Total
Locomotives—Steam .....	63	....	63
Locomotives—Electric .....	....	8	8
Locomotive tenders .....	....	10	10
Freight-train cars .....	5,775	1,269	7,044
Passenger-train cars .....	217	....	217
Electric motor cars .....	100	....	100
Company service equipment .....	35	1	36
Total estimated cost .....	\$28,645,000		

In addition to the above rolling stock the Pacific Fruit Express Company (the stock of which is owned one-half by Southern Pacific Company and one-half by Union Pacific R. R. Co., and which furnishes refrigerator cars to, and operates icing stations for, the Southern Pacific and Union Pacific Systems) ordered during the year 3,057 refrigerator cars, the estimated cost of which is \$10,154,000.

Three additional passenger ferry steamers (San Mateo, Shasta, and Yosemite) have been placed in service between San Francisco and Oakland to accommodate the increase in local passenger and automobile traffic; and contracts were made during the year for the construction of one ocean-going passenger and freight steamer of 11,100 tons displacement, one tug, one steam lighter, and ten hoisting lighters for service in the company's New York-New Orleans and Galveston steamship line. The cost of this floating equipment will approximate \$4,030,000.

Including the Southern Pacific's one-half of the Pacific Fruit Express equipment, the total estimated cost of rolling stock and floating equipment provided for during the year amounted to \$37,752,000.

## THE CONTROL BY THE SOUTHERN PACIFIC OF THE CENTRAL PACIFIC THROUGH LEASE AND STOCK OWNERSHIP

In last year's report it was stated that the Southern Pacific Company had re-acquired control of the Central Pacific pursuant to an order of

the Interstate Commerce Commission and subject to the conditions thereby imposed; and that it was expected at an early date to bring the Commission's order and the Company's action thereunder to the attention of the District Court of Utah, charged with entering a final decree pursuant to the opinion of the Supreme Court and the laws of the United States. This has been done and the District Court has rendered a final decree recognizing the lawfulness of the control acquired under authority of the Commission's order. We therefore have the satisfaction of stating that the question of the Southern Pacific ownership and control of the Central Pacific has now been settled in a manner which is in the public interest and in harmony with latest expression of legislative policy, and which, at the same time, avoids the evil of a separation of the properties.

## NATRON CUT-OFF

The plans completed in 1905 for the construction of the Natron Cut-Off contemplated the construction of a line about 280 miles in length extending from Natron, Oregon, the end of a branch line of the Oregon & California Railroad, to Weed, California, on the main line of the Central Pacific, thus providing for an alternate line between Springfield Junction, Oregon, and Weed, California, shorter in distance, of easier grades, and less curvature than the existing line over the Siskiyou Mountains, via Ashland, Oregon. Work on the Cut-Off was commenced in 1905, and up to February 11, 1914, when the Government instituted its suit attacking the right of your Company to control the Central Pacific, there had been completed and placed in operation 160.88 miles as follows:

Natron to Oakridge, Oregon .....	34.39 miles
Weed, California, to Kirk, Oregon .....	126.49 "

Total .....

As your Company was at that time carrying in its treasury \$30,139,349.53, of bonds and notes of Central Pacific Ry. Co. and its underlying companies, which had been taken over against advances for construction of Central Pacific branches and extensions, and as it would be called upon to furnish funds to complete the Cut-Off, then estimated at upwards of \$16,000,000, it was deemed advisable to suspend the work until the outcome of the Government's suit had been determined.

## BALANCE SHEET

## SOUTHERN PACIFIC COMPANY AND TRANSPORTATION SYSTEM COMPANIES

COMBINED ASSETS—EXCLUDING OFFSETTING ACCOUNTS				COMBINED LIABILITIES—EXCLUDING OFFSETTING ACCOUNTS			
Assets	December 31, 1923	+ Increase or — Decrease		Liabilities	December 31, 1923	+ Increase or — Decrease	
INVESTMENTS				STOCK			
Investment in road and equipment .....	\$1,116,385,551.65	+\$51,471,243.22		Capital stock of Southern Pacific Company .....	\$344,380,905.64		
Improvements on leased railway property ..	369,058.17	—\$4,094,479.86		Capital stock of Transportation System Companies .....	346,832,900.00	+\$500.00	
Sinking funds .....	18,229,257.11	+758,099.00		Total stock outstanding .....	\$691,213,805.64		\$500.00
Deposits in lieu of mortgaged property sold ..	18,196,850.42	+18,121,875.00		Premium on capital stock of Southern Pacific Company .....	\$6,304,440.00		
Miscellaneous physical property .....	16,983,458.89	+2,352,730.79		Total .....	\$697,518,245.64		\$500.00
Investments in affiliated companies:				LONG TERM DEBT			
Stocks .....	288,380,943.55	+7,038,934.96		Funded debt unamortized:			
Bonds .....	149,366,436.25	+5,905,898.67		Book liability .....	\$595,574,230.76	+\$19,730,889.59	
Stocks } Cost inseparable .....	9,187,716.74	—963,984.96		Less held by or for companies .....	2,591,175.00	—750,000.00	
Bonds }				Actually outstanding:			
Notes .....	29,994,056.31	+552,070.14		Southern Pacific Company .....	\$158,213,760.00	+\$21,065,400.00	
Advances .....	135,859,994.14	+6,959,139.18		Transportation System Companies .....	434,769,295.76	—584,510.41	
Other investments:				Total funded debt .....	\$592,983,055.76		\$20,480,889.59
Stocks .....	1,567,292.01	—8,501.00		Nonnegotiable debt to affiliated companies:			
Bonds .....	37,948,823.06	—14,535,583.54		Open accounts .....	31,750,993.26	+\$5,513,365.10	
Notes .....	1,557,304.89	—56,432.85		Total .....	\$624,734,049.02		\$25,994,254.69
Advances .....	180,659.34	—42,602.25		CURRENT LIABILITIES			
Miscellaneous .....	206,839.71	—15,134.71		Traffic and car-service balances payable ..	\$5,587,829.98	+\$154,134.31	
Total .....	\$1,824,414,242.24	\$73,443,271.79		Audited accounts and wages payable .....	17,829,658.82	+2,623,322.39	
CURRENT ASSETS				Miscellaneous accounts payable .....	1,276,375.23	—35,269.94	
Cash .....	\$20,453,478.26	—2,576,984.95		Interest matured unpaid .....	4,070,853.78	—407,197.85	
Demand loans and deposits .....	3,013,868.85	—1,576,355.64		Dividends matured unpaid .....	5,253,499.13	—3,230.68	
Special deposits .....	306,961.90	+\$1,920.12		Funded debt matured unpaid .....	13,713.92	—11,000.00	
Loans and bills receivable .....	103,331.96	—24,230.43		Unmatured interest accrued .....	4,818,790.25	+60,239.52	
Traffic and car-service balances receivable ..	2,812,344.55	+122,780.51		Unmatured rents accrued .....	324,895.01	+14,089.47	
Net balance receivable from agents and conductors .....	3,613,854.04	—387,759.56		Other current liabilities .....	2,100,416.25	+663,559.87	
Miscellaneous accounts receivable .....	7,822,608.31	+645,127.46		Total .....	\$41,276,032.37		\$3,058,647.09
Material and supplies .....	35,889,293.56	+6,107,574.39		DEFERRED LIABILITIES			
Interest and dividends receivable .....	2,540,989.18	—236,051.90		Other deferred liabilities .....	\$338,068.97	+\$254,924.42	
Rents receivable .....	239,579.88	+1,911.85		UNADJUSTED CREDITS			
Other current assets .....	335,719.16	—157,315.05		Tax liability .....	\$13,104,530.93	+\$3,313,770.62	
Total .....	\$77,132,029.65	\$1,920,616.81		Insurance and casualty reserves .....	2,631,702.05	+345,919.50	
U. S. GOVERNMENT				Operating reserves .....	3,439,391.10	—2,878,715.56	
U. S. Government—Deficit in guaranteed income .....		—\$26,120,156.10		Accrued depreciation—Road .....	2,063,670.40	+262,784.40	
DEFERRED ASSETS				Accrued depreciation—Equipment .....	66,011,883.79	+3,461,174.98	
Working fund advances .....	\$142,998.37	—\$134,040.67		Other unadjusted credits .....	1120,603,469.41	—11,531,549.85	
Insurance and other funds .....	25,360.00			Total .....	\$207,854,647.68	—\$7,026,615.91	
Other deferred assets .....	13,505,428.38	+\$1,483,331.86		CORPORATE SURPLUS			
Total .....	\$13,673,786.75	\$1,349,291.19		Additions to property through income and surplus .....	\$6,179,493.59	+\$4,508,295.97	
UNADJUSTED DEBITS				Funded debt retired through income and surplus .....	25,234,995.49	+561,193.75	
Rents and insurance premiums paid in advance .....	\$179,979.49	+\$48,438.53		Sinking fund reserves .....	14,182,548.62	+964,294.18	
Discount on capital stock .....	3,988,600.00	—\$76,562.70		Appropriated surplus not specifically invested .....	3,818,177.83		
Discount on funded debt .....	1,793,918.90			Total appropriated surplus .....	\$49,415,215.53		\$6,033,783.90
Other unadjusted debits .....	13,331,048.17	—3,771,169.64		Profit and loss—Balance .....	313,377,345.99		18,478,235.69
Securities issued or assumed—Unpledged ..	*2,488,425.00	—750,000.00		Total corporate surplus .....	\$362,792,561.52		\$24,512,019.59
Securities issued or assumed—Pledged .....	*102,750.00			Grand total .....	\$1,934,513,605.20		\$46,793,729.88
Total .....	\$19,293,546.56	—\$3,799,293.81					
Grand total .....	\$1,934,513,605.20	\$46,793,729.88					

\* Excluded from total assets, and a corresponding amount excluded from outstanding funded debt, in accordance with regulations of the Interstate Commerce Commission.

† Represents, principally, interest on advances to Affiliated Companies, which has not been taken into income account. See last paragraph under heading "Deductions from Gross Income."



On July 2, 1922, in response to inquiries made by various commercial organizations in the State of Oregon, your Executive Committee announced that the Company would proceed with the work of completing the gap in the Natron Cut-Off as soon as its right to hold the Central Pacific had been fully and definitely established. Pursuant to this promise and in order to avoid delay, your Company on March 23, 1923 (following the favorable decision of the Interstate Commerce Commission, but before the final decree of the Federal Court confirming the right of the Southern Pacific to hold the Central Pacific had been rendered), applied to the Interstate Commerce Commission for authority to proceed with such work. The Commission's order granting such authority was dated August 15, 1923, and the work of completing the Cut-Off was commenced on September 1, 1923.

This work involves the construction of 108 miles of main line and 29 miles of sidings over the Cascade Mountains between Kirk and Oakridge, Oregon, including 19 tunnels having an aggregate length of 16,445 feet, the estimated cost of which is \$15,932,589. Up to March 31, 1924, the line had been relocated, shortening the distance from 118 miles to 108 miles, practically all the right-of-way had been acquired, 18.70 miles of track completed, and 18 miles of roadway completed ready for tracklaying. Contracts have been let for the grading and tunneling of an additional stretch of 56 miles, of which 6 miles have been cleared ready for grading.

When completed this Cut-Off as relocated will extend from Natron, Oregon, to Weed, California, a distance of 269.54 miles, and will cost about \$28,700,000. It will shorten the distance between San Francisco and Portland by approximately 20 miles, will give two lines between Weed, California, and Springfield Junction, Oregon, one over the Siskiyou Range with grades of 174 feet to the mile, and one over the Cascade Range with grades of 95 feet to the mile, and will open up a new territory which, it is expected, will furnish your Company profitable traffic.

#### DOUBLE TRACKING CENTRAL PACIFIC BETWEEN OAKLAND AND OGDEN

Traffic congestion at the time of the San Francisco Fire in 1906 emphasized the necessity of double tracking certain portions of the Central Pacific between Oakland and Ogden, and it was decided to double track the entire line proceeding first, however, with the work in the more congested districts. This program was followed, and up to the end of 1914, when the work was suspended pending the determination of the Government's suit attacking the right of your Company to hold the Central Pacific, there had been completed and placed in operation about 197 miles of second track between Sacramento and Ogden. Following the favorable decision of the Interstate Commerce Commission in the Central Pacific Case, this work was resumed, and an additional 37 miles of second track was completed and placed in operation during the year 1923, making a total of 234 miles of second track completed and placed in operation between Sacramento and Ogden to December 31, 1923. Including 52.5 miles of second track now under construction, the 183 miles of Western Pacific Railroad between Alazon and Weso, Nevada, which your Company is to operate jointly with the Western Pacific, as explained in a separate paragraph, and the second track on the line of the Southern Pacific Railroad between Oakland and Sacramento, this will give an aggregate of 553 miles of second track between Oakland and Ogden, leaving only the following stretches to complete the double tracking of the line, viz:

Hafed to Oreana, Nevada.....	104.7 miles
Moor to Valley Pass, Nevada.....	24.2 "
Lucin to Lakeside, Utah.....	54.8 "
Saline to West Weber, Utah.....	20.3 "
Total.....	204.0 miles

#### AGREEMENTS WITH WESTERN PACIFIC RAILROAD COMPANY

On March 7, 1924, the Southern Pacific Company and the Western Pacific Railroad Company announced that they had entered into agreements which, briefly stated, are as follows:

1. Southern Pacific and Western Pacific to operate their tracks between Alazon (near Wells) and Weso (near Winnemucca), Nevada, a distance of 183 miles, as a double track railroad, for a period of 50 years from August 1, 1924, thus giving each company the benefit of double track service between such points;
2. The Western Pacific, as occasion may arise, to handle traffic for Southern Pacific on the former's line over the Sierra Nevada Mountains between Weso, Nevada, and Chico, California, as a bridge, the arrangement including the Sacramento Northern as the section of the bridge between Oroville and Chico, California. The minimum traffic to be moved over the bridge in any year being one-half of the traffic, other than live-stock and perishables, moving to and from Oregon points via Southern Pacific to, from, or through Ogden;
3. Southern Pacific to handle traffic over its line between Suisun and Sacramento, California, as a bridge, both for Western Pacific and for Sacramento Northern, the Suisun branch of the latter at the present time being isolated from the rest of its property;
4. Pacific Fruit Express Company, owned equally by Southern Pacific and Union Pacific, has acquired the right to operate all Western Pacific refrigerator cars in connection with its own refrigerator cars under conditions which assure an equitable distribution of such equipment to shippers of perishable products on Southern Pacific, Union Pacific, and Western Pacific Lines. With equipment ordered, this makes a total of 33,606 cars available for the use of the three lines.

The Nevada paired track arrangement gives your company a needed second track without the necessity of large capital expenditures therefor, thus conserving capital for other urgent uses.

The bridge arrangement over the Sierra Nevada Mountains gives your company a second route over that formidable range for the movement of Oregon lumber and other nonperishable traffic over a line 38.6 miles shorter and less congested than the present route. On the other hand, the bridge arrangement over your company's line between Suisun and Sacramento will link the Suisun branch of the Sacramento Northern with the parent company's line at Sacramento.

Under the agreement between the Pacific Fruit Express Company and the Western Pacific (which merely establishes in the form of a definite contract an oral arrangement in effect during the past season) all the refrigerator cars serving perishable fruit traffic are placed under the control of the former company, which deals directly with the shippers, its plan of distribution being based on a careful and intensive study of the needs of each section, as determined by the perishable products produced in such section.

These agreements are in accordance with a memorandum dated January 16, 1923, filed with the Interstate Commerce Commission by the Southern Pacific and the Western Pacific at the time of the Central Pacific hearing before the Commission, which memorandum was referred to by the Commission in its decision of February 6, 1923, authorizing the continued control of the Central Pacific by your company. With the establishment of these agreements all the suggestions in said memorandum will have been carried out, that feature looking to the establishment of through rates between the east and Southern California points over Western Pacific and Southern Pacific having become operative several months ago.

These agreements will result in greatly increased efficiency in service to the public. The advantages accruing to the two companies in employing the facilities of one for the business of the other are independent of, and have no relation to, the solicitation of traffic, each company having to seek its business as vigorously as before.

The above will show the additional facilities afforded for handling traffic over the very heavy grades of the Siskiyou Mountains and of the Sierra Nevada, two of the three conspicuous obstructions to traffic on the Pacific System. Considerable work has been done on the remaining heavy grades over the Tehachapi mountains, the situation as to which at the present time is as follows:

Double track has been completed from Mojave to Tehachapi station, a distance of 19.8 miles, and from Bakersfield to Sivert, 12.1 miles, a total of 31.9 miles out of the distance of 68 miles from Mojave to Bakersfield, leaving 36.1 miles, or all of the heavy grade on the north slope of the range, yet to complete. Surveys have been completed for a second track on this section, affording a compensated maximum grade southbound of 98 feet to the mile as against the present grade of 132 feet to the mile on the present operated line.

#### CONTROVERSY ARISING OUT OF THE OREGON AND CALIFORNIA RAILROAD'S LAND GRANT

This is an accounting suit brought in 1917 by the United States seeking to offset against the compensation of \$2.50 per acre, due the Company for the unsold lands, moneys received by the Company, in excess of \$2.50 per acre, by reason of past sales, leases and otherwise, as well as taxes levied since the forfeiture decision in 1913 and voluntarily paid by the Federal Government to the State of Oregon. When our last year's report was issued this case was being heard in the United States District Court of Oregon. Illness of the trial judge has delayed up to this time the submission of the case; but a decision by the lower court may be expected in the near future.

#### SOUTHERN PACIFIC RAILROAD COMPANY OF MEXICO

In last year's annual report mention was made of the agreement dated March 2, 1923, between Southern Pacific Railroad Company of Mexico and the Mexican Government, under which the Railroad Company, in partial settlement of its claims, received notes of the Mexican Government aggregating 13,600,000 pesos payable at the rate of 200,000 pesos per month, or an aggregate of 2,400,000 pesos per annum. Of the notes so received, notes aggregating 2,400,000 pesos, which matured during the last nine months of the year 1923 and the first three months of 1924, together with the interest thereon, have been paid off.

Under the said agreement the Government pledges itself to study and settle with a spirit of absolute equity and reasonable promptness, the balance of the Railroad Company's claim, amounting to 10,465,000 pesos, the amount to be paid to be based on adequate evidence, and when agreed upon to be covered by notes. During the year a representative of the Government completed an investigation of these accounts and an early adjustment is expected.

The agreement with the Mexican Government provides for the completion by the Railroad Company of the 100-mile gap in the main line between Tepic and La Quemada; and the rehabilitation by the Railroad Company of the Tonichi Branch, about 90 miles in length, and of the Alamos Branch, about 40 miles in length, which had been partially destroyed by revolutionary forces. Work on the main line was begun on March 6, 1923, and although the work was delayed by unprecedented heavy rains, about 45 miles of right-of-way were cleared, and 20 miles of roadway graded, upon which 9 miles of track were completed during the year. As of March 15, 1924, a force of 3,363 men were engaged upon this work, at which date an aggregate of 24.8 miles of grading had been completed and 6.51 miles were nearing completion.

The work of rehabilitating the Tonichi and Alamos Branches was also begun in March, 1923, and 38.9 miles, or 43 per cent. of the former, and 23.3 miles, or 57 per cent. of the latter, was completed during the year.

Excluding interest, the investment of the Southern Pacific Company and Southern Pacific Railroad Company in the Southern Pacific Railroad Company of Mexico, as of December 31, 1923, was \$43,095,409. During 1923, the gross income (after deducting operating costs) of Southern Pacific Railroad Company of Mexico amounted to \$1,209,880.79. Deductions from gross income, excluding interest due the Southern Pacific Company and Southern Pacific Railroad Company, and the annual charge for amortization of improvements (this item being the annual payment into a sinking fund to retire the investment in the property at the expiration of the life of the concession, under the appropriate provision of the Mexican law) amounted to \$120,571.40, which would leave a net income of \$1,089,309.39, or the equivalent of 2.53 per cent. on the investment.

The average miles of road operated during the year was 1,131.31 as compared with 1,106.81 for 1922.

#### STATUS OF ACCOUNTS WITH UNITED STATES GOVERNMENT

In May, 1923, complete and final settlement was made with the Interstate Commerce Commission of all claims of the Southern Pacific Company and Transportation System Companies against the Government under the guaranty provision of the Transportation Act of 1920, covering the period from March 1 to August 31, 1920, the companies receiving in such settlement a balance due of \$4,738,859.06.

#### EMPLOYEES' WELFARE

On January 1, 1924, the company placed in effect a plan through which employees six months or more in the service may receive the benefit of inexpensive group life insurance in one of the largest old life insurance companies, also insurance against permanent disability resulting from sickness or accident. The company furnishes entirely at its own expense \$250 of such insurance to each employee six months in the service, increasing the free insurance to \$500 at the expiration of the first year of service. Employees are granted the option of subscribing to additional insurance, graded according to their salaries, to a maximum of \$3,000, at rates much lower than applicable to any insurance they might otherwise obtain, which are made possible because of the inexpensive character of group insurance itself, and by reason of the fact that the company makes a substantial contribution to the cost of such additional insurance. The success of the plan was remarkable, 93 per cent. of the eligible employees having made application for all additional insurance procurable; the remaining eligible employees are of course protected by the insurance granted them by the company without cost. The same plan was extended to employees of electric railway lines and other subsidiary corporations of which the Company owns the entire stock. The aggregate insurance thus carried provides 71,170 employees with \$116,343,250 of insurance, representing the largest group insurance policy ever written. It is estimated that the cost of the company's contribution to the plan will approximate the amount paid out in pensions.

Under the pension system put into effect January 1, 1903, there were carried on the pension rolls at the end of the year, 1,333 employees. The payments to pensioners for the year amounted to \$696,921.31, equivalent to six per cent. per annum on an investment of \$11,615,355.16.

## GENERAL

The dividends for the year on the capital stocks of the Southern Pacific Company and its Transportation System Companies held by the public amounted to \$20,663,094.32, as follows:

Dividends on the capital stock of the Southern Pacific Company:

1½ per cent. paid April 2, 1923.....	\$5,165,713.58
1½ per cent. paid July 2, 1923.....	5,165,713.58
1½ per cent. paid October 1, 1923.....	5,165,713.58
1½ per cent. payable January 2, 1924.....	5,165,713.58

Total, Southern Pacific Company.....	\$20,662,854.32
Dividends on stocks of Transportation System Companies held by the public.....	240.00

Total dividend payments for the year..... \$20,663,094.32

The total taxes for the year amounted to..... \$20,365,327.70

In the annual report for 1922, attention was directed to a reduction in operating expenses of \$16,776,000, substantially all of which, or \$16,350,000, was appropriated by the public through rate reductions. In addition thereto there was an increase in taxes of \$3,320,000.

In 1923 expenses were reduced by (a) \$4,011,000 less paid in wages, (b) \$3,819,000 less cost of fuel, and (c) \$777,000 in lower prices of materials and supplies, a total of \$8,607,000, all of which, and much more, was lost by a fall of \$17,549,000 in revenue, due to rate reductions by competent authority, and an increase of \$1,505,971 in taxes, a total of \$19,055,000 due to these two factors. The final result was a decrease in net income of \$10,448,000; in other words, for every dollar in expenses saved during the year, \$2.21 were taken by the public through reductions in rates and increases in taxes.

The most difficult problem confronting railway management today is the uncertainty regarding the future of the transportation industry of the country. Leaving aside all question of whether the national policy shall be that of government ownership or of private operation, it is imperative until and unless a change is made in the present national policy that there should be a well-defined and consistent program for the supervision and regulation of the railways and that there should not be constant proposals

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for new national and state legislation. Continual tinkering with legislation on this all important subject breeds such uncertainty that it is impossible for railway management to plan for the future on anything like a comprehensive scale, as under existing circumstances no one can foretell under what conditions they may have to operate. Opinions may differ as to the wisdom and effectiveness of the present Transportation Act, but the railways, in a measure, have adjusted themselves to its provisions, and a fair trial should be given to it before any radical changes are proposed or made. Too much emphasis cannot be laid on the provisions of that Act providing for a reasonable return upon the railway investment, and unless this is maintained there can be no inducement to undertake new or develop existing railway properties along constructive lines.

The investing public cannot be expected to provide for the ever-growing needs of the transportation industry unless it is reasonably secure against confiscatory legislation, and is assured that the railway property in which it invests will be permitted, under efficient management, to earn a reasonable return. It is most desirable in the interest of both the railways of the country and the public which they serve that a larger portion of the capital they require be provided by issuance of stock rather than of bonds, but it is hopeless to expect the public to invest in the stock of railway companies if all hope of reasonable returns is withheld from them. Continued increase in taxation, coupled with high operating costs and rate reduction, can only be offset by efficiency of management; and if it is to be feared that an increased return through efficiency of management will again be absorbed by even greater taxation, further reduction of rates, or oppressive regulatory measures, the situation of the investor in railway securities, and particularly in the stock of railway companies, would indeed become discouraging.

A conspicuous instance of the paralyzing effect of Government policy on the railroads is afforded in the litigation, lasting for ten years, that sought to terminate the control of the Central Pacific by the Southern Pacific. Double-tracking, ballasting, and other improvements designed to improve service to the public were deferred for a period of ten years, to be undertaken only after the settlement of this matter in the Federal courts.

The Board gratefully acknowledges its appreciation of the loyal and efficient services rendered by officers and employees during the year.

By Order of the Board of Directors,

JULIUS KRUTTSCHNITT,

Chairman of the Executive Committee.

## Missouri Pacific Railroad Company—Seventh Annual Report

### TO THE STOCKHOLDERS:

The Board of Directors herewith submits report of the operations and affairs of the Company as of December 31, 1923.

### CORPORATE INCOME STATEMENT

FOR THE YEAR ENDED DECEMBER 31, 1923, COMPARED WITH THE PREVIOUS YEAR

	1923	1922	Increase or Decrease
Railway Operating Revenues.....	\$114,607,947.73	\$99,921,331.07	\$14,686,616.66
Railway Operating Expenses....	97,939,965.67	84,658,914.62	13,281,051.05
Net Rev. R'lway Operations.....	\$16,667,982.06	\$15,262,416.45	\$1,405,565.61
Railway Taxes and Uncollectible Railway Revenue.....	\$4,482,564.67	\$4,055,983.60	\$426,581.07
Railway Operating Income.....	\$12,185,417.39	\$11,206,432.85	\$978,984.54
Other Operating Income.....	745,543.21	823,584.07	—78,040.86
Total Operating Income.....	\$12,930,960.60	\$12,030,016.92	\$900,943.68
Deductions from Operating Income.....	4,037,715.27	3,782,982.41	254,732.86
Net Railway Operating Income.....	\$8,893,245.33	\$8,247,034.51	\$646,210.82
Non-Operating Income.....	3,401,517.72	2,463,783.34	937,734.38
Gross Income.....	\$12,294,763.05	\$10,710,817.85	\$1,583,945.20
Deductions from Gross Income.....	12,173,417.33	12,124,530.27	48,887.06
Balance-Net Income transferred to Profit and Loss.....	\$121,345.72	*\$1,413,712.42	\$1,535,058.14

\* Deficit.

### GUARANTY PERIOD

The claim of the Company under the terms of Section 209 of the Transportation Act of 1920, which was prepared and filed with the Interstate Commerce Commission in accordance with its order of December 15, 1921, was decided March 17, 1924, and a final offer in settlement will soon be made.

### INCOME

A brief comparative statement of the Corporate Income is shown above, sub-divided to indicate the "Net Railway Operating Income" defined in the Transportation Act of 1920.

A detailed statement of Corporate Income is given on Page 8.

### OPERATIONS

(Compared with Previous Year)

The results from operations for the year show a substantial increase in volume of traffic handled and in gross revenue received.

Total Railway Operating Revenues for the year were \$114,607,947.73, an increase of \$14,686,616.66, or 14.70%.

The increase in freight revenue amounted to \$12,042,863.25, or 16.29%. The Total Number of Tons of Revenue Freight Handled increased 25.11%, while the Ton Miles increased 23.70%.

The Average Revenue Per Ton Mile was 11.59 mills, as compared with 12.33 mills in the previous year.

The increase in tonnage handled applied to practically all commodities, decreases being confined to a few commodities under Products of Agriculture and Manufacturers and Miscellaneous. The notable increases include Bituminous Coal, 20.33%; Clay, Gravel, Sand and Stone, 54.38%; Crude Petroleum, 218.49%; Total Products of Forests, 41.46%; Total Manufacturers and Miscellaneous, 22.91%.

The increase in Passenger Revenue amounted to \$2,071,743.15, or 12.26%. The Number of Revenue Passengers shows an increase of 11.23%, while the Number of Passenger Miles increased 11.84%, with practically the same Average Haul per passenger.

The Average Revenue Per Passenger Per Mile was \$0.0347 as compared with \$0.0345 last year.

Total Railway Operating Expenses increased 15.69%.

The increase in the amount of expenditures for repairs to locomotives and cars is reflected in the increased charges to Maintenance of Equipment; this is offset to some extent by the reduction in the transportation ratio for the last nine months of the year, resulting in a saving of \$2,391,277.00 and a reduction in Per Diem of \$1,278,829.00.

### FEDERAL VALUATION

The land and accounting reports of the Bureau of Valuation of the Interstate Commerce Commission were submitted for informal review during the year and suggestions for changes made by the Valuation Department of your company. The engineering report had previously been submitted and reviewed. Informal conferences with the Bureau are expected during 1924, following which the so called tentative valuation will be served, probably in the latter part of 1924.

### PENSION SYSTEM

Since the inauguration on July 1, 1917, of the Pension System, 373 employees have been carried on the pension rolls. On December 31, 1923, there were 255 retired employees receiving pensions with an average monthly allowance of \$51.00, involving a monthly expenditure of \$12,999.65.

### CAPITAL STOCK

No changes have been made in the Capital Stock during the year.

### FUNDED DEBT

Long Term Debt outstanding in the hands of the public increased \$3,057,600, the detail of changes being shown on page 13.

Equipment Trust Certificates, Series B, were issued for \$3,990,000, to apply on purchase of 50 locomotives and 77 cars for passenger service, and Equipment Trust Certificates amounting to \$808,400, matured and were paid during the year.

First Mortgage Bonds of the Pine Bluff and Western Railroad amounting to \$880,000, matured October 1, 1923, and were paid. \$14,000, principal amount of General Consolidated Railway and Land Grant Mortgage Bonds were retired with proceeds from sale of land grant lands.

The payment of \$80,000, Serial Note matured January 15, 1923, resulted in the release of \$107,000 First and Refunding Mortgage Bonds, Series D, held by the U. S. Government as collateral security which increased the amount of unpledged bonds, Series D, in the Treasury to a total of \$2,125,500, of which \$1,816,000, principal amount are carried as "Investment in Securities Issued, Assumed or Otherwise Carried as a Liability by the Accounting Company" and \$309,500, nominally issued.

Note for a demand loan of \$850,000, was given to Western Coal and Mining Company.

The Funded Debt outstanding is shown on pages 14 to 16, inclusive. Detailed description of the Mortgages will be found on pages 19 to 25, inclusive.

The Plan and Agreement for the reorganization of The Denver and Rio Grande Western Railroad System dated June 15th, 1923, and modified February 29, 1924, provides for the payment by your company of \$9,000,000 for the acquisition of one half of the Common Stock of the new Company, and one half of the Capital Stock of the Utah Fuel Company, together with the purchase of \$1,000,000, and under certain conditions an additional \$500,000, of the New Refunding and Improvement Bonds provided for by said Plan. The Plan has been approved by the various protective committees representing the security holders of the present Company, and is now before the Interstate Commerce Commission for their approval. Under this Plan the entire Capital Stock (having voting rights), will be vested in a voting trust for the equal benefit of the Missouri Pacific Railroad Company and the Western Pacific Railroad Company. The proposed Plan will fully protect the interchange of traffic between the Missouri Pacific Railroad Company and The Denver and Rio Grande Western Railroad System and its connections. Improvement in the interchange of traffic between the two companies during the latter part of the year, pending the final approval of the Plan, justifies the conclusion that under the close operating and traffic relations which will result from this plan, the interchange of traffic will be



materially increased. The control of The Denver and Rio Grande Western Railroad System by a competing line might result in the ultimate loss to your Company of not less than \$1,800,000 net income per annum on the volume of business heretofore interchanged with The Denver and Rio Grande Western Railroad System.

#### NEW LINES

No new lines were constructed. In January, 1923, the operated mileage was increased 22.15 miles by trackage rights over the line of the Midland Valley Railroad from Belle Plaine, Kansas, to Wichita, Kansas. The operation of 193.26 miles of line between Alexandria and New Orleans, La., under agreement between the Missouri Pacific Railroad Company, Texas and Pacific Railway Company, and the Trans-Mississippi Terminal Railroad Company, was resumed on September 1, 1923. The net increase in mileage owned and operated, including these and other changes of minor importance, was 215.48 miles, details of which appear on pages 42 and 43.

#### ROAD AND EQUIPMENT

There were delivered and put in service during the year, 46 Mikado Type Locomotives and 4 Mountain Type Locomotives for which orders had been placed prior to December 31, 1922.

There were ordered during the year:

- 40 Mikado Type Locomotives,
- 10 Pacific Type Locomotives,
- 9 Steel Divided Coaches,
- 8 Steel Dining Cars,
- 3 Steel Cafe Club Cars,
- 18 Steel Coaches,
- 12 Steel Chair Cars,
- 10 Steel Baggage Cars,
- 17 Steel Suburban Passenger Cars.

Of this Equipment, there was delivered and put in service in November, and December, 1923, 15 Mikado Type Locomotives and 10 Baggage Cars. Delivery is expected early in 1924, of the remaining units.

The details of charges to Road and Equipment are shown on Page 18, a summary of which follows:

New Lines Purchased.....	\$1,094,697.15
Road .....	4,843,299.66
Equipment .....	\$11,294,519.38
Less Equipment Retired.....	4,463,861.12
	6,830,658.26

Assets and Liabilities not appraised June 1, 1917 13,447.95

Total Charges to Road and Equipment.....\$12,782,103.02

In the following pages, comparisons of results of the year with those of the previous year exclude Federal Accounts.

By Orders of the Board of Directors.

L. W. BALDWIN, President.

#### PROFIT AND LOSS

DECEMBER 31, 1923.

Credit Balance, December 31, 1922.....	\$30,998,520.86
Credit Balance Transferred from Income Account.....	121,345.72
Profit on Road Sold.....	29,814.52
Unrefundable Overcharges .....	9,197.93
Donations .....	179,722.03
Miscellaneous Credits .....	514,311.78
	\$31,852,912.84

Less:

Surplus Appropriated for Investment in Physical Property .....	\$179,722.03
Debt Discount Extinguished through Surplus..	197,504.71
Loss on Retired Road.....	114,880.75
Miscellaneous Debits .....	1,714,161.58
	2,206,269.07

Credit Balance, December 31, 1923.....\$29,646,643.77

#### GENERAL BALANCE SHEET

DECEMBER 31, 1923, COMPARED WITH DECEMBER 31, 1922

ASSETS.			LIABILITIES		
December 31, 1923.	December 31, 1922.	Increase or Decrease	December 31, 1923.	December 31, 1922.	Increase or Decrease
<b>Investments:</b>					
Investment in Road and Equipment .....	\$396,052,676.80	\$383,270,573.78	\$12,782,103.02		
Improvements on Leased Railway Property .....	12,020.67	5,119.57	6,901.10		
Sinking Funds .....	734.19	21.97	712.22		
Deposits in Lieu of Mortgaged Property Sold.....	23,304.41	230,859.64	-207,555.23		
Miscellaneous Physical Property .....	2,348,634.85	2,334,811.70	13,823.15		
Investments in Affiliated Companies—Pledged .....	4,184,958.65	5,178,412.44	-993,453.79		
Investments in Affiliated Companies—Unpledged .....	7,204,763.96	5,832,058.45	1,372,705.51		
Investment in Securities Issued, Assumed or otherwise carried as a Liability by the Accounting Company—Pledged .....	4,165,065.10	4,165,065.10			
Investment in Securities Issued, Assumed or otherwise carried as a Liability by the Accounting Company—Unpledged .....	1,650,934.90	1,650,934.90			
Other Investments—Pledged .....	15,316,859.20	15,325,739.06	-8,879.86		
Other Investments—Unpledged .....	14,400,743.27	21,686,921.09	-7,286,177.82		
Total .....	\$445,360,696.00	\$439,680,517.70	\$5,680,178.30		
<b>Current Assets:</b>					
Cash .....	\$1,904,094.03	\$4,733,873.23	-\$2,829,779.20		
Special Deposits .....	3,972,663.15	1,465,136.19	2,507,526.96		
Loans and Bills Receivable .....	80,644.29	63,759.49	16,884.80		
Traffic and Car Service Balances Receivable .....	951,236.22	706,447.46	244,788.76		
Net Balance Receivable from Agents and Conductors.....	1,870,564.90	1,839,510.79	31,054.11		
Miscellaneous Accounts Receivable .....	4,226,091.19	3,945,171.73	280,919.46		
Material and Supplies.....	13,963,479.84	9,467,446.69	4,496,033.15		
Interest and Dividends Receivable .....	327,090.43	368,254.81	-41,164.38		
Rents Receivable .....	34,000.00	35,750.00	-1,750.00		
Other Current Assets.....	168,010.77	248,589.54	-80,578.77		
Total .....	\$27,497,874.82	\$22,873,939.93	\$4,623,934.89		
<b>Deferred Assets:</b>					
Working Fund Advances....	\$239,778.75	\$253,701.33	-\$13,922.58		
Other Deferred Assets.....	185,109.70	87,176.92	\$97,932.78		
Total .....	\$424,888.45	\$340,878.25	\$84,010.20		
<b>Unadjusted Debits:</b>					
Rents and Insurance Premiums Paid in Advance....	\$26,030.77	\$100,013.40	-\$73,982.63		
U. S. Govt. Guaranty under Transportation Act .....	660,448.74	5,027,909.88	-4,367,461.14		
Other Unadjusted Debits...	336,389.80	486,174.45	-149,784.65		
Total .....	\$1,022,869.31	\$5,614,097.73	-\$4,591,228.42		
Grand Total .....	\$474,305,328.58	\$468,509,433.61	\$5,796,894.97		
<b>Note:</b>					
The following Securities not included in Balance Sheet Accounts:					
Securities Issued or Assumed—Unpledged .....	\$309,500.00	\$202,500.00	\$107,000.00		
Securities Issued or Assumed—Pledged .....	6,818,500.00	6,925,500.00	-\$107,000.00		
Total .....	\$7,128,000.00	\$7,128,000.00			
<b>LIABILITIES</b>					
<b>Stock:</b>					
Capital Stock:					
Common .....	\$82,839,500.00	\$82,839,500.00			
Preferred .....	71,800,100.00	71,800,100.00			
Total .....	\$154,639,600.00	\$154,639,600.00			
<b>Long Term Debt:</b>					
Funded Debt Unmatured....	\$255,251,680.00	\$253,044,080.00	\$2,207,600.00		
Nonnegotiable Debt to Affiliated Companies .....	850,000.00		850,000.00		
Total .....	\$256,101,680.00	\$253,044,080.00	\$3,057,600.00		
Total Capital Liabilities.....	\$410,741,280.00	\$407,683,680.00	\$3,057,600.00		
<b>Current Liabilities:</b>					
Traffic and Car Service Balances Payable .....	\$1,005,161.85	\$1,368,051.94	-\$362,890.09		
Audited Accounts and Wages Payable .....	15,976,298.24	9,335,865.15	\$6,640,433.09		
Miscellaneous Accounts Payable .....	496,585.47	400,556.87	96,028.60		
Interest Matured Unpaid....	1,137,313.89	1,102,869.58	34,444.31		
Funded Debt Matured Unpaid .....	8,000.00	558,000.00	-550,000.00		
Unmatured Interest Accrued .....	3,312,354.34	3,308,032.77	4,321.57		
Unmatured Rents Accrued..	302,212.91	292,057.71	10,155.20		
Other Current Liabilities...	403,349.09	596,022.27	-192,673.18		
Total .....	\$22,641,275.79	\$16,961,456.29	\$5,679,819.50		
<b>Deferred Liabilities:</b>					
Other Deferred Liabilities..	\$140,343.07	\$153,677.70	-\$13,334.63		
Total .....	\$140,343.07	\$153,677.70	-\$13,334.63		
<b>Unadjusted Credits:</b>					
Tax Liability .....	\$2,354,154.99	\$2,328,417.94	\$25,737.05		
Insurance and Casualty Reserves .....	16,768.19	36,606.75	-\$19,838.56		
Operating Reserves .....	48,521.08	2,767,630.25	-2,719,109.17		
Accrued Depreciation—Equipment .....	7,017,839.98	6,185,529.93	832,310.05		
Other Unadjusted Credits..	1,135,290.15	1,009,424.36	125,865.79		
Total .....	\$10,572,574.39	\$12,327,609.23	-\$1,755,034.84		
<b>Corporate Surplus:</b>					
Additions to Property through Income and Surplus.....	\$564,211.56	\$384,489.53	\$179,722.03		
Profit and Loss.....	29,646,643.77	30,998,520.86	-\$1,351,877.09		
Total .....	\$30,210,855.33	\$31,383,010.39	-\$1,172,155.06		
Grand Total .....	\$474,305,328.58	\$468,509,433.61	\$5,796,894.97		
<b>Note:</b>					
The following Capital Liabilities not included in Balance Sheet Accounts:					
Funded Debt—Unpledged..	\$309,500.00	\$202,500.00	\$107,000.00		
Funded Debt—Pledged....	6,818,500.00	6,925,500.00	-\$107,000.00		
Total .....	\$7,128,000.00	\$7,128,000.00			
The Capital Liabilities shown above include the securities issued under the Reorganization Plan for bonds of various issues dealt with by the Plan, including \$1,643,000.00 principal amount, not acquired on December 31, 1923, which are accordingly not shown as Liabilities.					
The company is guarantor jointly with other companies of the securities of certain terminal companies none of which are in default.					

[ADVERTISEMENT]

# Chicago, Burlington & Quincy R. R. Co.—Seventieth Annual Report

CHICAGO, January 2, 1924.  
To the Stockholders of the Chicago, Burlington & Quincy Railroad Company:  
The following is the report of your Board of Directors for the year ended December 31, 1923:

## COMPARATIVE STATEMENT OF INCOME, YEARS ENDED DECEMBER 31

Percent of Ry. Oper.	1923	RAILWAY OPERATING REVENUES	1922	Percent of Ry. Oper.
73.32	\$126,433,098.13	Freight	\$121,388,901.62	73.61
16.68	28,569,830.88	Passenger	28,380,103.84	17.21
2.48	4,242,408.35	Mail	4,258,311.92	2.58
2.59	4,442,387.40	Express	3,948,338.83	2.40
2.58	4,412,431.25	All other transportation	4,059,086.27	2.46
1.63	2,798,801.02	Incidental	2,461,743.16	1.49
.22	371,703.77	Joint facility	419,984.90	.25
100.00	\$171,270,660.80	Total railway operating revenues	\$164,916,470.54	100.00
RAILWAY OPERATING EXPENSES				
12.84	\$21,984,557.03	Maintenance of way and structures	\$20,769,379.25	12.59
23.74	40,654,335.51	Maintenance of equipment	35,735,413.56	21.67
1.65	2,815,004.27	Traffic	2,267,367.08	1.37
37.01	63,395,809.20	Transportation	62,875,593.06	38.13
1.00	1,716,368.53	Miscellaneous operations	1,693,321.01	1.03
2.52	4,318,010.52	General	4,277,202.73	2.59
.35Cr.	593,705.50Cr.	Transportation for investment—Credit	Cr. 840,573.59	Cr. .51
78.41	\$134,290,378.56	Total railway operating expenses	\$126,777,703.10	76.87
21.59	\$36,980,282.24	Net revenue from railway operations	\$38,138,767.44	23.13
	\$9,268,054.87	Railway tax accruals	\$10,890,006.82	
	57,456.37	Uncollectible railway revenue	31,338.17	
	\$27,654,771.00	Railway operating income	\$27,217,422.45	
NON-OPERATING INCOME				
	\$593,161.45	Hire of equipment	\$454,226.60	
	612,915.71	Joint facility rent income	522,937.85	
	730,307.43	Miscellaneous rent income	723,110.39	
	1,729,257.30	Dividends and miscellaneous interest	2,366,498.67	
	5,199.41	Miscellaneous income	380,626.11	
	\$3,670,841.30	Total non-operating income	\$4,447,399.62	
	\$31,325,612.30	Gross income	\$31,664,822.07	
DEDUCTIONS FROM GROSS INCOME				
	\$1,766,285.34	Hire of equipment	\$1,192,169.77	
	1,728,996.02	Joint facility rents	1,850,243.59	
	153,810.66	Miscellaneous rents	121,296.17	
	8,256,488.34	Interest on funded debt	8,119,271.00	
	29,905.62	Interest on unfunded debt	10,904.50	
	99,597.13	Amortization of discount on funded debt	95,474.06	
		Miscellaneous income charges	13,975.07	
	\$12,035,083.11	Total deductions from gross income	\$11,403,334.16	
	\$25,365,566.80	Net railway operating income	\$25,152,173.54	
	\$19,290,529.19	Net income	\$20,261,487.91	
DISPOSITION OF NET INCOME				
	\$289,409.67	Sinking funds	\$294,250.46	
	17,083,735.00	Dividends	17,083,700.00	
	\$17,373,144.67	Total appropriations of income	\$17,377,950.46	
	\$1,917,384.52	Income balance transferred to profit and loss	\$2,883,537.45	

## CAPITALIZATION

Capital Stock:	
The Capital Stock outstanding remained without change during the year.	
Of the total amount outstanding	\$170,839,100
\$1,700 was represented by fractional stock scrip convertible, in multiples of \$100, into full shares. This scrip is not entitled to vote or to receive dividends until so converted.	
Dividends paid during the year and charged to income for the year were:	
June 25, 1923, 5% on \$170,837,300	\$8,541,865
December 26, 1923, 5% on \$170,837,400	8,541,870
Total charged to income for the year	\$17,083,735
Funded Debt:	
On December 31, 1922, the Funded Debt outstanding in the hands of the public was	
During the year 1923 the following changes were made:	
By the purchase of Nebraska Extension Mortgage	
Sinking Fund Bonds of 1927	\$40,000
By the retirement of Equipment Gold Notes maturing January 15, 1923	404,000
Total Deduction	\$444,000
On December 31, 1923, the Funded Debt outstanding in the hands of the public was	\$202,756,000

## GENERAL OPERATIONS

Revenues:	
Total Operating Revenues for 1923	\$171,270,660.80
Total Operating Revenues for 1922	164,916,470.54
Increase	\$6,354,190.26 3.85%

The increase was made up as follows:

Freight	Increased	\$5,044,196.51	4.16%
Passenger	Increased	189,727.04	.67%
Express	Increased	494,048.57	12.51%
Other Transportation Revenues	Increased	337,441.41	4.06%
Incidental Operating Revenues	Increased	288,776.73	10.02%

Total Increase ..... \$6,354,190.26 3.85%

The increase in freight revenue reflects a heavier business than in the preceding year, largely due to an increase of 26.29% in the tonnage of bituminous coal carried and an increase of 13.21% in the tonnage of manufactured products. Shipments of bituminous coal for the period April to August, inclusive, were greatly curtailed in 1922 as a result of labor trouble in the bituminous fields, while during 1923 we enjoyed a fair tonnage of this product throughout the year. The above increases were offset to some extent by a decrease of 10% in the tonnage of farm products handled due to the depressed conditions prevailing in agricultural districts during the major portion of the year.

A comparison with 1922 by commodities of tonnage handled shows the following:

Farm Products	Decreased	915,910 tons	10.00%
Animals and Products	Increased	350,470 tons	12.29%
Mine Products	Increased	3,338,921 tons	22.40%
Forest Products	Increased	573,150 tons	27.79%
Manufactured Products	Increased	1,056,575 tons	13.21%
Less-than-carload tonnage	Decreased	94,654 tons	4.32%

Total tonnage ..... Increased 4,307,552 tons 11.00%

A comparison of carloads shows:

Total cars (all commodities) in 1923	1,422,035 cars
Total cars (all commodities) in 1922	1,267,228 cars

Increase in 1923 ..... 154,807 cars 12.22%

Passenger revenue shows a very small increase. We carried 232,932 less revenue passengers than in 1922, but we carried each passenger an average of two miles further than in 1922. The automobile is steadily cutting into our local or short haul passenger business but the decrease in this class of traffic is being offset by a gradual increase in our long haul and tourist business.

The increase in express revenue was brought about in part by an increase in express business and in part by a further reduction in the expenses of the Express Company, due to cooperation of the railroads with the Express Company, resulting in an increased net revenue for division under the uniform contract with the Express Company.

Other transportation revenues were generally about the same as in 1922, with the exception of switching revenue, which shows an increase of 12.91% due to an increased number of cars handled.

The increase in incidental operating revenues was composed of a number of small increases in the various items classed under this heading, the largest of which was an increase of \$208,005.91 in demurrage accounts due to the increased volume of business:

Operating Statistics:	
Tons of revenue freight carried, 1923	43,483,603
Tons of revenue freight carried, 1922	39,176,051
Increase	4,307,552 11.00%
Revenue tons one mile, 1923	12,690,384,346
Revenue tons one mile, 1922	11,754,595,862
Increase	935,788,484 7.96%
Revenue tons per train mile, 1923	611.68
Revenue tons per train mile, 1922	628.82
Decrease	17.14
Revenue tons per loaded car, 1923	22.88
Revenue tons per loaded car, 1922	23.69
Decrease	.81
Average revenue per ton mile (cents) 1923	.996
Average revenue per ton mile (cents) 1922	1.033
Decrease	.037 3.58%
Average distance hauled per revenue ton (miles) 1923	291.84
Average distance hauled per revenue ton (miles) 1922	300.05
Decrease	8.21
Revenue passengers carried, 1923	18,502,145
Revenue passengers carried, 1922	18,735,077
Decrease	232,932 1.24%
Revenue passengers carried one mile, 1923	967,096,799
Revenue passengers carried one mile, 1922	941,748,451
Increase	25,348,348 2.69%
Average distance carried, revenue passengers, 1923	52.27
Average distance carried, revenue passengers, 1922	50.27
Increase	2.00 3.98%
Expenditures (Operating):	
Total operating expenses, 1923	\$134,290,378.56
Total operating expenses, 1922	126,777,703.10
Increase	\$7,512,675.46 5.93%

The increase in operating expenses was due to three major causes:

(1) An increase of 7.96% in net ton miles of revenue freight handled and 2.69% in revenue passenger miles, rendering necessary additional train service and increased transportation expense.

With an increase of \$6,354,190.26 in operating revenues for the year, the increased transportation required was furnished with an increase of only \$520,215; stated otherwise, with an increase of 11% in tons of revenue freight carried, reflected in an increase of 7.96% in net ton miles of revenue freight handled and 2.69% in revenue passenger miles, resulting with miscellaneous operating revenues in a total increase of 3.85% in revenues, the transportation cost was increased only .83%. The ratio of conducting transportation cost was 37.01%, which was the lowest transportation ratio for any year since 1917. The operating ratio was 78.41% as compared with 76.87% in 1922, this increase being wholly attributable to the increased maintenance expenditures for way and structures and for equipment;



(2) an increase of \$1,215,177.78 in expenditures for maintenance of way and structures, principally due to heavy damage to tracks and bridges on lines west of Missouri River by storms and floods, during the months of July, August, September and October. There were three successive destructive floods on our Wyoming lines, the first occurring on July 23rd and 24th, the second on September 27th and 28th and the third on October 9th.

The first of these floods damaged considerable mileage of track and a number of bridges between Casper and Thermopolis, Wyoming, and substantially destroyed about twenty miles of line in that territory between Lysite and Bonneville. Later floods not only interfered with reconstruction work, but destroyed a considerable amount of new work before opportunity had been given to protect it, and in consequence all through service between Casper and Billings was interrupted between July 23rd and November 1st. During this period through business was moved via the Sheridan-Alliance line.

(3) An increase of \$4,918,921.95 in the expenditures for maintenance of equipment. These expenditures were required in part because of delayed repairs resulting from strike of mechanical employees during the latter part of the year 1922, but also were due to the continuance of the program of equipment repairs and rebuilding of a large number of freight cars that had reached a period when that class of work was required to continue them in service. Approximately 6,000 steel coal cars, acquired about 12 years ago and which had reached a condition which required substantial rebuilding, were rebuilt during the year 1923, and it is expected that substantially the same number will require similar work during the next two or three years. In all, 11,638 freight cars of various types were given heavy repairs on our own rails, which was an increase over the year 1922 of 25.54%.

General repairs were given 896 locomotives during the year, or an increase of 59.43% over the preceding year. The power and cars of the Company at the end of the year were generally in better condition in consequence of these heavy expenditures than for many years previous.

A statement of operating expenses is shown in detail on pages 42 to 46, inclusive.

It may be noted further that on December 31st, 1920, the Company had 67,460 freight cars with a lading capacity of 2,836,643 tons and an average capacity per car of 42.05 tons. On December 31st, 1923, the Company had 69,756 freight cars, total lading capacity 2,943,011 tons, an average per car of 42.19 tons.

In 1923 the average cost per car for repairs of freight cars was \$59.88; in 1917; \$65.90 and in 1923 \$218.13, due principally to increases in wages and prices of materials.

At the present time 923 locomotives are equipped with superheaters and 259 with automatic stokers. Out of a total of 1,978 engines the total tractive power of locomotives on December 31st, 1923, was 71,389,600 pounds, an average of 36,092 pounds per locomotive. On December 31st, 1917, the total tractive power was 57,733,360 pounds, an average of 32,362 pounds.

The total payroll for the years 1913, 1917 and 1923 was as follows:

1913	\$36,917,360
1917	49,179,625
1923	82,017,006

During 1923 increases in wages of certain classes of employees were found necessary and were made effective aggregating on an annual basis the sum of approximately \$1,225,000.

There were no offsetting advances in freight or passenger rates, but some reductions were made necessary, so that the average rate per ton per mile on our freight traffic decreased 3.58% from the average for 1922. Had the same rate per ton per mile been collected in 1923 as in 1922, the total freight earnings of the Company would have been \$4,658,572 additional.

As compared with the year 1916 there has been an increase in the average revenue per passenger mile of 48.4%; on freight per ton per mile, 40.7%. The increase in the average wages paid per hour to employees was, in 1923, 108.5% over 1916; the increase in taxes paid was 92.3%; the price of engine fuel per ton increased 102% and the increase in prices of other materials generally averaged about 75%. This great disparity as between relative increase in cost of wages, taxes, fuel and material as compared with advances in rates would have greatly reduced the net revenues of the Company had it not been possible to overcome the disparity by improvement in methods of operation and economies resulting from capital expenditures for improved facilities, such as yards, engine terminals, modern machinery, heavier power and reduction in grades. The results accomplished in this respect are evidenced by the fact that the number of gross tons moved one mile on the railroad per hour of labor was 242.60 in 1916 and 295.39 in 1923, an increase of 21.8%.

Increased taxes paid by the Company are well shown by the following table of comparisons with previous years:

1913	\$3,551,981
1917	8,400,175
1923	9,268,055

#### Expenditures (Capital):

The year 1923 was notable for the great effort made to increase traffic capacity of the railroads, to handle the peak load of transportation with a minimum of delay and a maximum of service to the country. This effort was concentrated largely on improvements to enlarge capacity and in providing additions to equipment, together with improved facilities for maintaining equipment in a high state of repair. This movement was successful to a very gratifying extent, and your Company performed its full share in this accomplishment.

The Capital Expenditures of your Company during 1923 were as follows:

For Road	\$12,687,624.85
For Equipment	4,711,949.39
For General	9,174.35

Total \$17,408,748.59

#### LINE CHANGES IN WYOMING:

In the summer and fall of 1923, rainfall of unprecedented intensity occurred in the Wyoming District, particularly on the watershed of Bad Water Creek west of Casper, causing heavy washout damage and continued interruption of traffic from July 26th to November 1st. The most severe damage occurred between Lysite and Bonneville, a distance of twenty miles, where much of the line was destroyed. After thorough investigation, it was decided to relocate the line between these points on higher ground at a greater distance from the stream in order to reduce the liability of washout and delay to traffic. A desirable location was found that resulted in eliminating eight of the eleven crossings of the stream. Contract was let shortly after the floods occurred and work has been pushed with exceptional vigor. The relocated line was opened to traffic between Bonneville and Schoening, eight miles, on November 1st, 1923, and it is expected that the line from Schoening to Lysite, twelve miles, will be completed and in service early in 1924. The total estimated cost of this project, including charges to operation as well as to capital, is

\$2,422,504; the total expenditures to December 31st, 1923, amounting to \$1,087,891.91.

#### IMPROVEMENTS AND ADDITIONS TO EQUIPMENT:

Particular effort was made during the year to maintain a proper quota of equipment for maximum operating efficiency. Sixty modern Mikado freight locomotives equipped with superheaters, stokers and feed water heaters were delivered by the builders during the year, thus adding very materially to capacity to handle all business offered, and maintaining satisfactory service under maximum demand for transportation. There was also delivered during the year the following equipment, completing orders placed and partial deliveries during the preceding year and mentioned in the report for 1922:

97	40' 6" 80M Automobile cars
200	33' 2 3/4" 60M Refrigerator cars

Application of superheaters to 25 class R-4, R-5, S-1 and P-3 locomotives in order to modernize old types, was undertaken, and 7 R-5, 2 S-1 and 3 P-3 were completed at the end of the year.

Application of twenty feed water heaters to M-2 and M-2-A locomotives was undertaken to accomplish saving in fuel and increase capacity, and 6 Elesco and 7 Worthington Heaters were applied during the year.

#### VALUATION:

Aside from the cost of reporting on Additions and Betterments as required by Valuation Order No. 3, the monthly valuation expense attributable to the Federal Valuation Act of March, 1913, was reduced to about one-half of what it was at the beginning of the year. The greater part of the expense during 1923 was for replacement of information destroyed in the 1922 General Office fire, the preparation of data and exhibits for use in conferences and probable hearings on Engineering, Land and Accounting Reports of the Bureau of Valuation, Interstate Commerce Commission, and the conducting of conferences with that Bureau for the purpose of revising these reports. The work during the coming year will be largely concerned with continued revisions of reports and preparations to meet the tentative valuation which may be served before the end of the year. The total expenditures charged to Valuation to December 31, 1923, were \$3,445,175.60, of which \$287,017.50 represents the expenditure in 1923.

#### INDUSTRIAL:

There were constructed and extended during the year industrial tracks as follows:

	New Tracks	Extensions
On Lines East of the Missouri River....	41	21
On Lines West of the Missouri River....	23	10
	64	31

The number of new industrial leases made during the year reflects gradual expansion in business throughout all our territory, there being 478 new industrial leases executed during the year. One hundred and four important industrial plants were located on the railroad during the year and thirty-five existing industries made material additions to their plants.

The report for 1922 mentioned the progress being made in oil developments and this was continued, one new refinery being built during the year on the railroad in the Casper district.

Near Keystone, S. D., large deposits of feldspar have been discovered and it is thought can be worked with profit and should furnish considerable tonnage to the railroad.

#### AGRICULTURAL:

There has been a steady improvement in the farmer's financial condition during the year, but very little land changed hands by purchase. As a result of colonization advertising, inquiries for land totaled 3,400—more than double the number in 1922; 420 individuals filed on government lands in Wyoming, as compared with 1,330 in 1922 and 1,800 in 1921. The amount of desirable government land is steadily and rapidly decreasing. No new government irrigated homesteads were opened up for settlement, but work has continued on the Willwood Division of Shoshone project, and 18,000 acres will probably be opened for settlement in 1924. 988 cars of immigrants' effects were received on the Alliance, Casper, McCook, Sheridan and Sterling Divisions. This is 301 more than 1922, and 393 more than 1921, indicating increased settlement. A new booklet, advertising opportunities in Northeast Wyoming, was issued, and assistance was given in the preparation of new booklets for Logan County, Colorado, and Thurston County, Nebraska; 25,000 follow-up letters and 26,000 pieces of literature were sent to inquiries.

Agricultural activities were centered on promoting diversified farming, and livestock production. A twelve car Pure Bred Sire special train was operated in Colorado, from which 58 pure bred sires, donated by Colorado breeders and valued at \$10,000, were traded even for 58 scrubbs which were sold for slaughter at the conclusion of the trip for \$589.00. Twenty-nine communities were visited and 25,000 people saw the demonstrations proving the value of pure bred sires, and examined the educational exhibits; 90,000 pieces of literature were distributed, 4,500 column inches of newspaper publicity about this campaign with a total circulation of over 2,000,000 readers appeared in the press. 83 pure bred sires, 211 head of dairy cows, 600 head of feeder cattle and 7 carloads of feed and seed were purchased for farmers. 11,000 lbs. of high grade seed corn was furnished free to 740 farmers in the Big Horn Basin, Wyoming, to encourage corn growing. Three thousand acres were planted, the first state corn show was organized and 5,000 ears of corn exhibited. This is of great importance in stimulating the production of live stock and diversified farming in a section where it was thought corn could not be produced successfully for feed. A poster calling attention to a new pasture grass mixture for irrigated lands was printed and distributed. An investigation of the market for certified seed potatoes was made in Louisiana, Oklahoma and Texas, resulting in the sale of 28,000 pounds for dry land growers of Wyoming and Nebraska, thus opening up a very large market for future production. Several lots of western grown seed potatoes were introduced for experimental purposes into the Corn Belt. A large number of articles have been published and meetings held, covering a wide range of subjects, in the interests of better agriculture.

#### PENSION DEPARTMENT:

Reference was made in the report of the previous year to the inauguration of a pension system authorized by the Board of Directors on December 1st, 1921.

The plan has been in operation for two years with increasing indications of appreciation upon the part of former officers and employees.

During the year additional retiring allowances were made to 217 individuals, making a total as of December 31, 1923, of 732.

The total amount disbursed during the past year was \$416,155.01.

Following herewith is the report of the Comptroller.

By order of the Board of Directors.

HALE HOLDEN, President.

[ADVERTISEMENT]

(Continued from page 1231)

the Citizens & Southern Co., Savannah, have sold at 100 and interest \$7,000,000 first mortgage sinking fund 7 per cent gold bonds.

**LONG ISLAND.—Annual Report.**—The annual report for the year ended December 31, 1923, shows a net income of \$1,656,559 as compared with \$2,165,458 in 1922. A selection of the important figures in the income account follows:

	1923	Increase or decrease
Miles operated .....	397	
Freight revenue .....	\$10,511,943	\$1,574,374
Passenger revenue .....	20,732,638	1,482,614
Total operating revenues .....	34,085,420	3,133,881
Maintenance of way and structures .....	4,189,220	871,445
Maintenance of equipment .....	5,745,004	626,755
Traffic .....	267,709	52,931
Transportation .....	14,567,095	976,044
General .....	785,678	95,380
Total operating expenses .....	25,737,089	2,563,270
Net revenue from railway operations .....	8,348,332	570,611
Railway tax accruals .....	1,788,318	—7,543
Railway operating income .....	6,548,596	597,306
Net railway operating income .....	4,001,966	—965,488
Total non-operating income .....	1,075,128	489,815
Gross income .....	5,077,094	—475,673
Total deductions from gross income .....	3,420,535	33,227
Net income .....	1,656,559	—508,899
Appropriation to sinking and other reserve funds .....	430	
Balance transferred to credit of Profit and Loss .....	1,656,129	—508,899

**MAINE CENTRAL.—Equipment Trust Certificates.**—The Interstate Commerce Commission has authorized an issue of \$1,300,000 of equipment trust certificates to be sold at not less than 96.86.

**MARYLAND & DELAWARE COAST.—Securities.**—This company has applied to the Interstate Commerce Commission for authority to issue 17,500 shares of stock of no par value and \$350,000 of first mortgage 20-year 6 per cent sinking fund bonds, to be used in the acquisition and improvement of part of the road formerly owned by the Maryland, Delaware & Virginia, from Denton, Md., to Lewes, Del., 40 miles.

**MISSOURI PACIFIC.—New Directors.**—At the annual meeting in St. Louis on May 13, J. E. Davey and H. Hobart Porter, both of New York, were elected to succeed Edgar L. Marston and Harry Bronner, who have retired. The board will meet in New York on May 29 to elect officers.

**NEW YORK, NEW HAVEN & HARTFORD.—Equipment Notes.**—The Interstate Commerce Commission has authorized an issue of \$1,043,000 of equipment notes, to be exchanged at par for a like amount of notes outstanding.

**NEW YORK, NEW HAVEN & HARTFORD.—Abandonment.**—The Interstate Commerce Commission has authorized this company and the Old Colony to abandon the Shawmut branch from Harrison Square to Mattapan, Mass., 4.2 miles, on condition that the branch line shall be sold to the city of Boston. The city proposes to equip the line for electrical operation and lease it to the Boston Elevated Railway.

**NORTHERN COLORADO & EASTERN.—Incorporation.**—Articles of incorporation have been filed with the secretary of state of Colorado for the Northern Colorado & Eastern, formerly the Colorado, Wyoming & Eastern, which was recently purchased under a foreclosure. The incorporators are T. Callaway, H. J. Gallagher, A. D. Mason, L. P. Dorsey, and W. H. Kellogg. The seat of business is named as Walden, Colo. The capitalization is \$1,050,000 preferred stock at a par value of \$100 and 25,000 shares of common stock without fixed par value. The directors are the incorporators named and are the principal bond holders. The Colorado, Wyoming & Eastern was recently sold for \$201,000. See *Railway Age*, issue of April 12, 1924, page 964.

**SEABOARD AIR LINE.—New Director.**—W. W. Miller, of Hornblower, Miller & Garrison, has been elected a director succeeding Pierpont U. Davis, vice-president of the National City Company.

**SOUTHERN PACIFIC.—Equipment Trust Certificates.**—The Interstate Commerce Commission has authorized an issue of \$17,640,000 of equipment trust certificates to be sold at not less than 97.56.

**STATENVILLE.—Abandonment.**—This company has applied to the Interstate Commerce Commission for authority to abandon its line from Haylow to Statenville, Ga., 14 miles.

**TEXAS & PACIFIC.—Annual Report.**—The annual report for the year ended December 31, 1923, shows a net income of \$3,433,111

as compared with \$1,772,584 in 1922. A selection of the principal items in the income account follows:

	1923	1922	Increase or decrease
Freight revenue .....	\$22,482,492	\$21,738,482	\$744,010
Passenger revenue .....	7,573,856	7,279,004	294,852
Total operating revenues .....	32,592,489	31,381,795	1,210,694
Maintenance of way and structures .....	4,571,382	5,051,050	—479,668
Maintenance of equipment .....	7,273,178	6,544,264	728,914
Traffic .....	625,094	586,305	38,790
Transportation—Rail line .....	11,485,278	11,843,491	—358,212
General .....	1,157,622	1,225,780	—68,158
Total operating expenses .....	24,981,658	25,494,086	—512,427
Net revenue from railway operations .....	7,610,831	5,887,710	1,723,121
Railway tax accruals .....	1,430,000	1,230,397	199,603
Operating income .....	6,846,365	5,269,960	1,576,405
Net railway operating income .....	5,237,535	3,629,473	1,608,062
Gross income .....	5,609,347	3,945,603	1,663,744
Total deductions from gross income .....	2,176,236	2,173,018	3,217
Net income .....	3,433,111	1,772,584	1,660,527
Total appropriations of income .....	3,433,111	1,772,584	1,660,527
Income balance .....			

**Plan Operative.**—Kuhn, Loeb & Co. have announced that the Texas & Pacific plan of readjustment has been declared operative. The Interstate Commerce Commission has authorized financing in accordance with the plan. See *Railway Age* of May 10, 1924, page 1186.

**WISCONSIN CENTRAL.—Notes.**—This company has applied to the Interstate Commerce Commission for authority to issue \$6,000,000 of three-year 5½ per cent secured notes, guaranteed by the Minneapolis, St. Paul & Sault Ste. Marie, and also to pledge as security therefor \$8,000,000 of 5 per cent bonds.

### Dividends Declared

Alabama Great Southern.—Common, 3½ per cent, semi-annually; common (extra), ½ per cent.; both payable June 28 to holders of records May 24. Preferred, 3½ per cent, semi-annually, payable August 16 to holders of record July 12; preferred (extra), ½ per cent, payable June 28 to holders of record May 24.

Canadian Pacific.—Common, 2½ per cent, quarterly, payable June 30 to holders of record June 2.

Chesapeake & Ohio.—Common, \$2.00, semi-annually; preferred, \$3.25, semi-annually; both payable July 1 to holders of record June 3.

Chestnut Hill.—1½ per cent, quarterly, payable June 4 to holders of record May 20.

Hocking Valley.—2 per cent, semi-annually, payable June 30 to holders of record June 3.

New York, Chicago & St. Louis.—Preferred, series A, 1½ per cent, quarterly, payable July 1 to holders of record May 15.

Philadelphia, Germantown & Norristown.—3 per cent, quarterly, payable June 4 to holders of record May 20.

Pittsburgh, Bessemer & Lake Erie.—Preferred, 3 per cent, semi-annually, payable June 1 to holders of record May 15.

St. Louis Southwestern.—Preferred, 1¼ per cent, quarterly, payable June 30 to holders of record June 14.

Southern Pacific.—1½ per cent, quarterly, payable July 1 to holders of record May 31.

Union Pacific.—Common, 2½ per cent, quarterly, payable July 1 to holders of record June 2.

### Trend of Railway Stock and Bond Prices

	May 13	Last Week	Last Year
Average price of 20 representative rail- way stocks .....	63.58	63.87	63.70
Average price of 20 representative rail- way bonds .....	85.78	85.27	82.72



International

**A Derailed Runaway Locomotive on the B. & O. C. T., Which Killed Several Persons at Highway Crossings**



## Railway Officers

### Executive

**E. W. Beatty**, president of the Canadian Pacific, was on May 7 also elected chairman of the board of directors of the company to succeed the late Lord Shaughnessy.

### Operating

**F. S. Risley**, whose promotion to superintendent of the New York Central, with headquarters at Buffalo, N. Y., was announced in the *Railway Age* of May 3, page 1123, was born on September 6, 1879, at Kingston, N. Y., and was educated in the common schools. He entered railway service in 1898 as a telegraph operator on the River division of the New York Central and subsequently served as copying operator, train dispatcher and assistant trainmaster of the same division. In September, 1908, he became a trainmaster at Richland, N. Y., and in 1910 he was transferred to the Mohawk division at Albany in the same capacity. In 1913 Mr. Risley was appointed assistant superintendent of the



F. S. Risley

Mohawk division, with the same headquarters, the position he was holding at the time of his recent promotion to superintendent of the Buffalo division.

**W. H. Moore** has been appointed manager of dining cars of the Nashville, Chattanooga & St. Louis, with headquarters at Nashville, Tenn., succeeding W. F. Reed, who has resigned.

**J. J. Breheny**, whose promotion to superintendent of the Oklahoma-Southern division of the Chicago, Rock Island & Pacific, was reported in the *Railway Age* of April 26, was born on July 3, 1882, at Atlantic, Ia. He entered railway service in May, 1898, as a roadmaster's clerk on the Western Iowa division of the Chicago, Rock Island & Pacific. He was promoted to chief clerk to the engineer maintenance of way of the Iowa division in 1902, and held this position until 1907, when he was promoted to assistant roadmaster of the Colorado division. Mr. Breheny was promoted to roadmaster of the Nebraska division in 1908. He was promoted to trainmaster of the Colorado division in 1912, and in 1913 was transferred to the Kansas division. He was appointed special representative of the general manager of the Second district in September, 1923, and held this position until January, 1924, when he was appointed supervisor of operation, with headquarters at Chicago. Mr. Breheny continued in this position until his



J. J. Breheny

recent promotion to superintendent of the Oklahoma-Southern division.

**David B. Fleming**, whose promotion to general superintendent of the New York Central, with headquarters at Albany, N. Y., was announced in the *Railway Age* of May 3,



D. B. Fleming

page 1123, was born on February 12, 1877, at Snowshoe, Pa., and received a high school education. He entered railway service in July, 1893, as a telegraph operator on the Pennsylvania division of the New York Central & Hudson River, now a part of the New York Central, and in October, 1899, he became a train dispatcher. In February, 1903, he became chief dispatcher and in November of the next year he was appointed assistant trainmaster. In October, 1906, he became trainmaster of the Mohawk division and in

November, 1910, he was appointed assistant superintendent of the Hudson division. Mr. Fleming was transferred to the Mohawk division as assistant superintendent in July, 1911, and in September, 1913, he was appointed superintendent of the Buffalo division. In April, 1918, he was transferred, in the same capacity, to the Mohawk division, the position he was holding at the time of his recent promotion to general superintendent.

**Joseph E. Crawford**, whose promotion to general manager of the Norfolk & Western, with headquarters at Roanoke, Va., was announced in the *Railway Age* of May 3, page 1122, was born on December 1, 1876, at San Diego, Cal. Mr. Crawford studied engineering at the University of Pennsylvania and in 1895 entered the service of the Pencoyd Iron Works as a draftsman and designer. He entered railway service in July, 1903, as bridge engineer for the Norfolk & Western at Roanoke and in 1913 he was appointed acting chief engineer. In 1914 Mr. Crawford was appointed chief engineer and held that position until February 16, 1923, when he was promoted to the position of assistant general manager,



J. E. Crawford

in which capacity he was serving at the time of his recent promotion to general manager. His entire railway service has been with the Norfolk & Western.

### Financial, Legal and Accounting

**A. R. Seder** has been appointed auditor of disbursements of the Chicago, St. Paul, Minneapolis & Omaha, with headquarters at St. Paul, Minn., succeeding J. P. Plunkett, who has resigned to enter the legal department of the Great Northern, as reported in the *Railway Age* of April 19.

**C. A. Cook**, assistant treasurer of the Chicago Great Western, with headquarters at Chicago, has been promoted to treasurer, with the same headquarters, succeeding J. F. Coy-

kendall, who died on May 9. **A. A. Seig** has been appointed assistant treasurer and paymaster, with headquarters at Chicago, succeeding Mr. Cook.

### Traffic

**J. E. Dalrymple**, vice-president in charge of traffic of the Canadian National, has been given jurisdiction over the express department of the system.

**C. L. Holloway**, traveling passenger agent for the New York Central, with headquarters at Oklahoma City, Okla., has been promoted to the newly created position of general agent, passenger department, with the same headquarters.

**W. R. Martin**, district freight representative of the Pennsylvania, with headquarters at Tulsa, Okla., has been appointed district representative at Dallas, Tex., succeeding **L. J. Warner**, deceased. **J. W. Byrne** has been appointed district freight representative at Tulsa, succeeding Mr. Martin.

**G. S. Trowbridge**, whose promotion to assistant to the general traffic manager of the St. Louis Southwestern was reported in the *Railway Age* of May 3, was born on November 22, 1878, at Galveston, Tex., and entered railway service in May, 1899, as a stenographer in the operating department of the St. Louis Southwestern at Tyler, Tex. He was transferred to the traffic department at St. Louis, Mo., in August, 1901, and subsequently held the positions of stenographer, secretary to the general freight agent, rate clerk, tariff clerk, chief rate clerk and chief clerk in the traffic department. He was later promoted to assistant general freight agent, with headquarters at St. Louis, and held this position until December, 1920, when he resigned to engage in the publishing business. Mr. Trowbridge returned to railway service on April 15 of this year when he was appointed assistant to the general traffic manager of the St. Louis Southwestern, with headquarters at St. Louis, Mo.



G. S. Trowbridge

**D. J. Collins**, whose promotion to assistant general freight agent of the Missouri-Kansas-Texas was reported in the *Railway Age* of April 19, was born on February 23, 1884, at St. Louis, Mo. He entered railway service in October, 1899, as a messenger boy on the Missouri-Kansas-Texas and subsequently held various clerical positions in the local freight office at St. Louis, Mo. In August, 1908, he was promoted to livestock agent and he held this position until February, 1909, when he was appointed bill of lading clerk at St. Louis. Mr. Collins was promoted to contracting agent in September, 1911. He was promoted to chief clerk to the assistant general freight agent in April, 1918, and held this position until March 1, 1922, with the exception of the period from February 10 to November 1, 1919, when he was engaged as traffic manager of a manufacturing company. Mr. Collins was appointed chief clerk in the general freight office at St. Louis in March, 1922, and held this position until his recent promotion to assistant general freight agent.

### Maintenance of Way and Signaling

**Lawrence Spalding**, whose promotion to valuation engineer of the Bessemer & Lake Erie, with headquarters at Greenville, Pa., was announced in the *Railway Age* of April 26, page 1070, was born on July 25, 1890, at Yonkers, N. Y., and was graduated from Cornell University in 1913 in civil engineering. He entered railway service on July 1, 1913, with the Pittsburg, Shawmut & Northern remaining with that road until April 1, 1914, when he

went with the Bessemer & Lake Erie and served in various positions on the engineering corps and in the drafting and valuation departments. On March 1, 1916, he was appointed supervisor of structures and held that position until November 1, 1919, when he was appointed assistant valuation engineer, in which capacity he was serving at the time of his recent promotion to valuation engineer.

**W. S. Burnett**, whose promotion to engineer of construction of the Cleveland, Cincinnati, Chicago & St. Louis was reported in the *Railway Age* of April 26, was born on September 5, 1878, at Montrose, Scotland. After graduating from the East of Scotland Technical College, Mr. Burnett came to the United States and entered railway service as a rodman on the Southern Indiana, now a part of the Chicago, Milwaukee & St. Paul. In 1900 he was promoted to instrumentman and he held this position until 1904, when he was appointed resident engineer of the Chicago Southern, now a part of the Chicago & Eastern Illinois. Mr. Burnett entered the service of the Cleveland, Cincinnati, Chicago & St. Louis in 1906 as resident engineer. He was appointed resident engineer of the Chicago, Milwaukee & St. Paul in 1908, and he held this position until 1910, when he returned to the Cleveland, Cincinnati, Chicago & St. Louis as resident engineer. He was promoted to district engineer in 1912 and the following year was promoted to engineer maintenance of way at Springfield, Ohio. Mr. Burnett was later appointed district engineer at Springfield and he held this position until his recent promotion to engineer of construction.

### Purchasing and Stores

**W. J. Kelleher** has been appointed purchasing agent of the Alabama & Vicksburg, with headquarters at New Orleans, La., succeeding T. H. Ryan, resigned to accept service with another company.

**H. E. Anderson** has been appointed assistant purchasing agent of the Chicago, St. Paul, Minneapolis & Omaha, with headquarters at St. Paul, Minn., succeeding William Nelson who has resigned to engage in other business.

### Obituary

**M. Carroll**, assistant general baggage agent of the Terminal Railway Association of St. Louis, died in that city on May 7.

**J. F. Coykendall**, treasurer of the Chicago Great Western, with headquarters at Chicago, died in that city on May 9. Mr. Coykendall was born on October 25, 1859, at Canton, Ill. He entered railway service in January, 1881, with the Wabash, and in June, 1883, was appointed secretary to the vice-president of the Chicago, Burlington & Quincy. Mr. Coykendall was appointed secretary to the vice-president of the Union Pacific in March, 1887, and he held this position until March, 1892, when he resigned to engage in other business. Mr. Coykendall was elected treasurer of the Chicago Great Western in October, 1909, and held that position until his death.

**C. E. Carson**, formerly superintendent of the Southern division of the Chicago Great Western, who retired from active service in 1923, died at Milwaukee, Wis., on May 8. Mr. Carson was born on January 9, 1870, at Portsmouth, O. He entered railway service in June, 1888, as a brakeman on the Kansas City, Ft. Scott & Memphis, now a part of the St. Louis-San Francisco and was later promoted successively to conductor, assistant yardmaster, yardmaster and trainmaster. Mr. Carson was appointed division superintendent on the Missouri Pacific in 1897, and he served in this capacity until 1903, when he was appointed division superintendent on the Colorado & Southern. He was appointed division superintendent on the Chicago Great Western in 1911 and was appointed to a similar position on the Ft. Dodge, Des Moines & Southern in 1914. From 1917 to 1919, Mr. Carson served in the United States Army as general superintendent of transportation in France and chief transportation officer of the District of Paris. In October, 1919, he returned to railway service in this country as general agent for the Ft. Dodge, Des Moines & Southern at Chicago. He was appointed division superintendent of the Chicago Great Western in May, 1922, and held that position until his retirement a year later.